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THE
PHILADELPHIA JOURNAL
OF THE
MEDICAL AND PHYSICAL SCIENCES.

SUPPORTED BY AN ASSOCIATION OF PHYSICIANS,

AND

EDITED BY N. CHAPMAN, M. D.
PROFESSOR OF THE INSTITUTES AND PRACTICE OF PHYSIC AND CLINICAL
PRACTICE, IN THE UNIVERSITY OF PENNSYLVANIA.

"In the four quarters of the globe, who reads an American book? or goes to see an American play? or looks at an American picture or statue? *What does the world yet owe to American Physicians or Surgeons?*"

Edinburgh Review, No. LXI

VOL. V.

PHILADELPHIA:
H. C. CAREY & I. LEA—CHESNUT STREET.
William Fry, Printer.
1822.

Eastern District of Pennsylvania, to wit.

***** BE IT REMEMBERED, that on the thirteenth day of November,
* SEAL. * in the forty-seventh year of the independence of the United States of
* * * * * America, A. D. 1822, H. C. Carey & I. Lea, of the said District, have
deposited in this office the title of a Book, the right whereof they claim as prop-
rietors in the words following, to wit:

“The Philadelphia Journal of the Medical and Physical Sciences. Supported by
an Association of Physicians, and edited by N. Chapman, M. D. Professor of
the Institutes and Practice of Physic and Clinical Practice, in the University
of Pennsylvania.

“In the four quarters of the globe, who reads an American book? or goes to
an American play? or looks at an American picture or statue? *What does the
world yet owe to American Physicians and Surgeons?*”

Edinburgh Review, No. LXV.

In conformity to the Act of the Congress of the United States, intituled, “An
Act for the encouragement of Learning, by securing the Copies of Maps, Charts,
and Books, to the Authors and Proprietors of such Copies, during the times
therein mentioned.”—And also to the Act, entitled, “An Act supplementary
to an Act, entitled, ‘An Act for the encouragement of Learning, by securing the
Copies of Maps, Charts, and Books, to the Authors and Proprietors of such
Copies during the times therein mentioned,’ and extending the benefits thereof to
the Arts of designing, engraving, and etching historical and other Prints.”

D. CALDWELL,

Clerk of the Eastern District of Pennsylvania.

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TO READERS AND CORRESPONDENTS.

1. We wish it to be distinctly understood, that we neither have, nor will receive, any pecuniary compensation as Editor of this Journal. The motives which led us to engage in the enterprise, are announced in our prospectus, and will be found liberal, and wholly disinterested. To this subject attention is now called, with a request, that communications for the work, and all matters of correspondence relative to it, may be addressed to the publishers, Messrs. H. C. Carey and I. Lea, Booksellers, Philadelphia.

2. We thank Dr. Reynolds, for the valuable paper "*on Aneurism of the Heart,*" which he has communicated to us. It shall conspicuously appear in our next number. We cordially invite him to write often, and much, for this Journal.

3. By an accident, over which we had no control, the "*Review of certain publications, on Fractures of the Bones,*" which was handed to us some months ago by a friend in New York, has been excluded from the present number. In our next we shall take care to present it to our readers.

4. We acknowledge the receipt of several other communications, among them an interesting case of *Encisted Tumor*, all which shall duly appear.

TO SUBSCRIBERS.

The price of this work is five dollars per annum, payable on delivery of the second number in each year. Those persons who do not remit the amount, will, in every case, be stricken off the list of subscribers, at the close of the year, as the publishers cannot afford to supply it without receiving payment.

THE
PHILADELPHIA JOURNAL
OF THE
MEDICAL AND PHYSICAL SCIENCES.

ART. I. *On the Sick Headache.* BY JAMES MEASE, M. D.

THE painful nature of this disease, its annual increase, and a belief that I can suggest some hints on the causes that produce it, by attending to which it may be prevented, and some remedies that will remove it when actually present, have induced me to put my thoughts, and the result of my observations, on paper: and I shall be happy if I prove the means of effecting the relief I wish to the afflicted.

This disease is the result of our advanced state of civilization, the increase of wealth and of enjoyments in the power of most people in this country, and, I may add, of the luxurious and enervating habits in which those in easy circumstances indulge. It is unknown among the natives of our forests, or among those of the frontier inhabitants whose necessities oblige them to live in a manner the reverse of that common among the inhabitants of the Atlantic states, and particularly of our large cities and towns, among whom the complaint very generally prevails. Some of their habits, against which I shall caution my readers, are indeed of a nature calculated to lay the foundation of the complaint. But the vigour of their constitutions derived from original stamina, and daily exposure to pure air, aided by constant

exercise, are more than sufficient to countervail their bad effects. Such being the facts, it follows, that to secure an exemption from the disease, we ought to endeavour to assimilate our habits as much as possible, to those of that class of society which is happily exempt from it; and it is agreeable to know that this object can be effected without any diminution of rational enjoyment. Part of the general advice I intend to give may indeed be objected to, because those who are affected will be called upon to lay aside habits and some articles of diet, which from having been long indulged in, they may deem necessary to comfort; but those who have not resolution to submit to the privations to be mentioned, must make up their minds to suffer from the complaint. There is no alternative.

The stomach is the seat and throne of this disease, and affects the head by means of that sympathetic connexion which it holds with it and every organ of the human body. High living, over-eating, late hours, disposition to acidity in the stomach, partial mastication or long continued use of food of difficult digestion, suppers, indolence, and relaxing habits, and the presence of bile in the stomach, are the general remote causes. Our remedies therefore must be directed to the stomach, and the restoration of its nervous functions, the impaired state of which occasions the agony endured by those who labour under the complaint. The desirable change however must be effected by slow degrees, for the stomach gives way slowly, and the means of cure must be gradually applied. Nor ought invalids to become impatient because after a short trial of the plan recommended, a cure may not be effected. Let them steadily and patiently submit to it, and they may depend upon their hopes not being disappointed. The length of time required to re-establish the tone of the nerves of the stomach will vary in different persons in proportion to the violence of the disease, the fidelity with which the sufferer follows the advice given, and the susceptibility of the stomach to the impression of the remedies and food prescribed: the object of their exhibition however *will be obtained* sooner or later.

An unfortunate but very erroneous opinion prevails among those afflicted with sick headache, that there is no cure for it, and hence they submit to exquisite torture with patience and philosophic resignation. But this prejudice is as little founded in reality, as a similar one with respect to the gout, which we now well know yields readily to regimen, regular and proper exercise, and the occasional use of other remedies. I will venture to say, that in every instance in which this prejudice occurs it will be found, that those who entertain it are attached to indulgencies, and a general system of living, which have produced their disease; and that they prefer continuing such a course of indulgencies during the intervals of suffering, to giving it up, or to submitting to the steady discipline requisite to a cure.

The disease most commonly forms in the course of the night, and on awaking, a pain is felt in some part of the head, but generally over one or both eyes. More or less languor attends it, with a diminished or total disrelish for food, and great sensibility to light. After continuing for one or two days, and even longer, if no remedy be taken, a nausea sometimes succeeds, which finally ends in vomiting; or this may easily be excited by a draught or two of warm water: in either case, relief is soon obtained from the more acute symptom, and sleep follows: though a distressing soreness and confusion of the head succeeds, which gradually goes off, and health is restored. In some cases the pain in the head is preceded by a dulness and heaviness of the eyes, and confusion of the brain, which finally terminate in the fixed pain. Cold feet sometimes precede an attack and constitute the first symptom of its approach.

The means of cure are naturally divided into medicines, and diet, including regimen. I shall treat of them in that order.

Medicines.

In the commencement of a regular plan for the restoration of the tone of the nerves of the stomach, a laxative ought to be the first remedy. Of the numerous class of that descrip-

tion, none is so proper as rhubarb, of which twenty, thirty, or thirty-five grains, in powder, may be taken early in the morning in syrup, or in the form of pills of a convenient size, made with the same material, or, which is preferable, castile soap, on account of the alkali therein increasing its purgative power. Its activity may be quickened, and the object of its exhibition promoted, by the addition of four or six grains of calomel, if no objection to it exist, arising from great susceptibility of the salivary glands to the peculiar effect of the mercury on them, or from its harsh operation on the stomach or bowels. During the operation of the medicine, several tea cups of thin gruel made of oat-meal or corn-meal, to which so much salt has been added as to be perceptible, should be taken. The breakfast after this prescription, and through the treatment, may consist of a cup or two of weak souchong tea, with a soft boiled egg, weak coffee, or water in which chocolate-nutshells have been boiled, with a slice of dry stale bread. The dinner must be of the lightest kind, of any of the articles hereafter specified.

In southern constitutions, the relaxation of the stomach favouring the passage of bile into it, an attack of the disease is generally brought on by the presence in it of that secretion; the removal of which is therefore indispensably requisite previously to the taking any medicine to relieve the headache, or to the commencement of any regular system of prevention of the disease. An emetic in this case will be absolutely necessary, and the article preferable to all others is ipecacuanha, of which fifteen, twenty, or twenty-five grains, (according to the ease or difficulty of being operated on by it,) may be taken in half a wine-glass of water. Four or six grains of calomel will insure its full operation, and the complete removal of the offending cause. The emetic may be worked off by a tea cup or two of weak chamomile tea, taken at intervals, after the medicine has operated two or three times. The evening is the most suitable time to take the emetic, after the operation of which sound and refreshing sleep most commonly follows. In case the medicine does not operate once or twice on the bowels, the dose of rhu-

barb and calomel before mentioned, twenty or twenty-five grains of jalap, or rhubarb with four or five of calomel (if the bowels are difficult to move) may be taken the following morning or night, and worked off by gruel of corn or oat meal. Nausea from the calomel is in general prevented by the addition of a few drops of essence of peppermint, or a tea-spoonful of compound spirit of lavender. If it come on, it may be relieved by a few spoonful of a watry infusion of cinnamon or ginger, or by a little mint water. No fear need be entertained of the proportion of calomel prescribed affecting the mouth, (unless the system be uncommonly sensible to its effects) for the quantity added to the jalap and rhubarb insures its passage through the stomach and bowels; whereas a smaller dose might not be removed, and would then touch the mouth: at any rate its effect will only be temporary.

This important preliminary being settled, the patient must commence with the following medicine. As I write for others, besides medical men, I shall give the prescription in English.

*Take of prepared rust of iron	1 drachm, (60 grains)
Columbo root, fresh powdered,	2 do.
Orange peel	3 do.

Mix and divide into twenty papers: one to be taken, morning and evening, in a small quantity of jelly or syrup, and washed down with a wine glassful of cold water.

After taking the above medicine for four weeks, rhubarb, recently powdered, may be substituted for the columbo, and, if it be desired to render it more grateful, cinnamon may be added to the whole. If the dose be inconveniently large, the number of papers may be increased to thirty. After another month's use of this new prescription, the biters may be omitted for four or five weeks, and the prepared rust of iron used alone.

The occasional presence of bile or acid in the stomach, an occurrence that is easily known by the invalid, must be

* *Carbonas Ferri Præcipitatus*, Pharmacop. Edin.

removed by an emetic of ipecacuanha for the first; and by twenty or thirty grains of magnesia, or dried subcarbonate of soda, in the dose of from ten to twenty grains, for the latter, in pills made with castile soap; three or four of which may be taken in a day.

I have known Fowler's mineral solution given with great benefit in this disease: and my confidence in its powers, induces me to recommend it in violent cases.*

The dose may be from eight to ten or twelve drops at the utmost, in half a wine glass of water, early in the morning for an adult. If nausea be produced, it may be taken when going to bed, or one or two hours after a meal. The addition of a tea-spoonful of compound spirits of lavender, (where this medicine has not been originally added) renders it more agreeable, and prevents nausea. It must be discontinued for a short time, when swelling in the face, or sense of fulness in the eyes are perceived. After the return of a fit, it may be again commenced. If nausea, or griping, follow its use, the dose must be lessened.†

A tea-spoonful of common salt, dissolved in half a pint of water, and taken frequently in the course of the day, has afforded temporary benefit in a few cases in this city. But I do not recommend it, by reason of its uncertainty.

Diet.

It has been long remarked, that "every man is his own

* Dr. J. C. Otto has favoured me with the particulars of two cases of headache, in which he also gave the mineral solution with the most decided benefit. One was a lady who had severely suffered with the sick headache for thirty years. She took three drops three times a day, for nine months, without any unpleasant effects, and was apparently cured. After omitting the medicine for three months, the complaint returned: the use of the solution for three weeks more, perfectly cured her.

The other was a boy, aged eleven years, who suffered almost daily from a headache that succeeded a supposed affection of the liver. Five drops, three times a day, cured him. In other cases he has also used the solution with good effects.

† This composition is arsenic dissolved in water by means of the vegetable alkali. It is perfectly safe, and frequently used. The only caution necessary, when taking it, is not to drink cold water, or to take cold.

physician at forty years of age:" for by that time, it is supposed, he will have ascertained what articles of diet agree best with him. Indeed, the want of attention in persons not finding out what articles are useful or injurious, by the age of forty, would indicate equal folly with their using any which they have experienced to be noxious. Taking it for granted, therefore, that the discovery of the useful and hurtful has been made; the first direction which reason prescribes is, to use the one, and avoid the other. Persons subject to sick headache, make the discovery, most commonly, before the age mentioned. But as it may happen, that some have not been so fortunate, and may have persisted, either from ignorance or inattention, in a course of diet extremely hurtful, the following cautions and rules are given.

1. As bread constitutes so large a portion of our daily aliment, and forms a most important item in the articles by which a cure of this distressing complaint is to be effected, it demands the first notice.

Bread should be light, and none other must be touched. There is no excuse admissible for heavy bread. If corn bread be used, it should be eaten in the form of thin, crisp cakes. I cannot conceive a more injurious article of diet, to a weak stomach, than the hot corn bread of the southern states. No wheaten bread should be eaten unless twenty-four hours old. Economy* and health unite in proscribing fresh bread as an article of diet: for, however palatable, it is highly injurious to the stomach, and tries its powers more than almost any other of the causes of the disease. During the years of youth, when the natural vigour of the stamina is daily deriving an accession of strength—or, in constitutions enjoying greater powers of the stomach than are absolutely required for the purposes of digestion, fresh bread may be eaten with impunity for years. But I will venture to assert, that every meal in which it is taken, will detract some

* The London bakers, in their answers to the questions put to them by the committee of the house of commons in England, appointed during the scarcity of the year 1801, to devise means of affording relief, asserted, that three stale loaves were equal to five fresh loaves.

little from the powers of that organ, and that, in time, it will show its effects. As an attachment and relish for bread one day old is acquired in a short time, the sooner the former is left off the better. *Indeed a cure must not be expected, so long as the use of fresh bread is indulged in.*

In cases of severe affliction from the disease, and where a disposition to acidity prevails in the stomach, it is advisable to lay raised bread aside altogether, and to substitute ship-bread or crackers, or rice boiled dry. Where the teeth have failed, biscuit may be soaked in cold water, half an hour before they are wanted. The species of animal food found to agree best with the invalid should be eaten, and none else. Wild meats, being more tender, and more easily digested, than the flesh of domestic animals, should be taken advantage of whenever occasion will permit. Our markets annually furnish, in the proper seasons, abundance of venison, which, of all meats, is the most proper for those persons afflicted with a weak stomach, or sick headache. Game of all kinds, and rabbits, afford an ample supply of tender food. Beef is an article upon which we can subsist longer without disrelish than almost any other. The part of the sirloin, containing the tender loin, should be preferred, though other parts, provided they are tender and juicy, may be eaten. Good mutton may be a standing dish. If either be roasted, the overdone outside parts are to be avoided, being difficult of digestion. Beeve's tongues, salted and smoked, and corned beef, are equally proper, and even medicinal, owing to the stimulus of the salt used to cure them. In general, corned beef is not half boiled by American cooks. Slow, steady boiling, for several hours, is requisite, to render that article sufficiently tender for a deranged stomach.* Woodcocks and snipes must not be eaten early in the spring, being then extremely unwholesome. In the spring of 1817,

* Rapid boiling occasions a waste of fuel, dissipates with the steam the volatile and savoury particles of the meat, and thus renders the article less good and palatable. The water in which meat is boiled, should be kept just at the boiling point. The same rule holds in regard to soup.—The knowledge of this secret we owe to Count Rumford.

several instances occurred in Boston, of serious indisposition from inattention to this admonition. The pheasant (of Pennsylvania,*) has, to my knowledge, produced violent sickness and vomiting, when eaten late in the winter, owing to their feeding on the buds of laurel (*kalmia latifolia*). The breast is always safe food. The lean part of a white fat fillet of veal may be occasionally eaten.† The knuckle of veal must never be touched, being very difficult of digestion.

Of shell-fish, crabs and oysters are the only species allowable. The latter should always be accompanied with a due proportion of bread or biscuit, to compel mastication, and to prevent over-eating. Lobsters are inadmissible. I have known more than one violent cholera morbus, and a most obstinate diarrhœa, to proceed from eating lobsters for supper. There can be no objection to trout, rock (streaked bass), black-fish, sea-bass, sheepshead, perch, flounders, and whiting. Boiled fish are generally found more easy of digestion than when otherwise prepared. The use of other fish must be regulated by the effects produced on the individual eating them. Soft boiled eggs, poultry, and ham well boiled, may properly constitute a part of the dinner of an invalid. Pork, unless young, and fed on corn and milk, is too strong, and, in any case, the lean part only should be eaten. Meat-pies are ruinous to the stomach of all subject to sick headache. But whatever may be the article of animal food that constitutes the material of dinner, the following rules ought to be constantly observed.

1. If the meat be not salted, it should be kept as long as possible before it is cooked, that it may be tender. In winter there can be no excuse for inattention to this rule; and,

* Called Partridge in New York, and the eastern states. *Tetrao Umbellus* or *Tympanistes*.—See the N. York Med. Repos., vol. i. p. 161, for my paper on the subject.

† The veal of New Jersey is superior to that of Pennsylvania, owing to the greater attention paid to the diet and treatment of the calf.—For the mode of making such veal, see the "Archives of Useful Knowledge," vol. iii. p. 78. D. Hogan, No. 349, High Street, Philadelphia.

even in summer, the cheap and ingeniously contrived refrigerators, which are made in this city, enable every one not having the luxury of an icehouse at command, to keep meat two or three days.

2. Whether roasted, boiled, or stewed, meat ought to be done until tender. French cooks pay more attention to this point than those of America or England.

3. Simplicity in diet is essential to those subject to sick headache. The weak stomach revolts at the task of overcoming the difficulty of digesting a dinner composed of numerous ingredients, and either rejects them, or labours to do the hard duty thus imposed. It may succeed after a time, though every such exertion tends infallibly to increase the disease in question.

The dinner ought to consist of one dish of animal food, and one or two of vegetables, besides bread: for the stomach is less strained to extraordinary activity, than when several different articles are eaten. Besides, some articles, apparently of the same nature, do not agree when mixed, and may do harm by creating a disturbance in the stomach, the quiet of which it is important to preserve. The principle of this harmony of aliments, applies almost with equal force to vegetables, among which we see agreements and disagreements almost as great as those we remark in the mixture of two articles of animal food, or of fish and flesh.*

* Wonderful cures have been effected by simplicity of diet. The father of Professor Cooper was cured, in London, of an asthma, to which he had long been subject, by an exclusive diet of boiled carrots for two weeks, as recommended by John Wesley, in his "Primitive Physic." During this time he drank little water. He remained well for twelve years; but having returned to his former generous living, he was again attacked.—I have heard of another cure by the same diet.

The disease called "broken wind," in horses, which is no more than the asthma in the human species, is cured in England by an exclusive diet of the same vegetable.

A lady in Philadelphia was cured of a most severe rheumatism by a diet of milk solely: and Dr. Cheyne records, that Dr. Taylor, a contemporary with himself, was cured of epilepsy by the same diet. English Malady, p. 255.—Our books of medicine record many other cures effected by rigorous simplicity of diet.

There are few articles upon which we can live so long, without tiring, as beef, potatoes, and rice. These are so innocent, and so well adapted to give tone to the stomach, that they ought to constitute the diet of such as are labouring under sick headache, as long as they can be procured, or taken without disrelish. Much of their excellence, however, depends upon their cooking. It is essential that the potatoes be mealy, and the rice must be boiled dry: as this article agrees with most persons, every invalid is urged to use it as steadily as possible. Green peas, carrots, parsnips, and small hominy, may occasionally be substituted.

4. Slow and complete mastication of food is indispensable. The pleasure, moreover, of eating, is very much increased thereby; because the organs of taste are more forcibly impressed, than when the food is a shorter time retained on them, by imperfect mastication. Another advantage of slow eating is, that by the stomach being gradually distended, there is less danger of its being overloaded, and less sensibly affected by the subsequent relaxation, than if the food be hastily swallowed. When slowly masticated, the food is also more equally exposed to the action of the saliva and gastric liquor, which are designed by nature to dissolve it. The digestion of food is thus promoted. Long intervals between meals render the adoption of this practice very difficult: for the keenness of the sensation of hunger involuntarily forces us to eat quickly. The invalid should, therefore, never permit that sensation to proceed further than to cause a relish for food, which should consequently be taken as often as is requisite, without reference to the regular hours of the family meals. Various articles can always be at hand. But, on the contrary, unappeased hunger is not less injurious, than adding to the load in the stomach before the previous meal has been digested. The inevitable consequence of this repletion is, that digestion is disturbed, the organ is unduly roused to overaction, and, in the end, evinces the loss of vigour, by the occasional derangement of its nerves, and the production of the distressing sympathetic affection of the pain of the head.

The effects of such indiscretion is often shown several days after it has been committed: but most commonly the next day.

5. Moderation in diet must always be attended to. The stomach may be injured, by being overloaded with simple food, as certainly, though not so speedily, as by other food of improper quality. The invalid should leave off eating, the moment the first distention of the stomach is perceived. Slow mastication favours satiety, without inducing undue distention. The dinner should consist principally of vegetables. Most persons, in the United States, eat much more animal food than is necessary for health.

The rule with respect to butter shall be short. A more innocent article of food is not to be found than pure fresh butter, nor a more injurious one than strong butter. The former may, therefore, be safely taken, in moderation, provided it be not found to disagree with the stomach. This point can easily be settled by the invalid. Many physicians, without consistency or reflection, cry out against fresh butter as noxious, and yet will prescribe repeated doses of castor oil, without once inquiring whether it is not, as it often is, offensive from rancidity. The most innocent mode of using butter is to spread it cold on stale bread fresh toasted, or on toasted biscuit, previously soaked.

Soups, of every kind, are highly injurious, and ought, therefore, to be proscribed from among the articles of diet of those troubled with sick headache. They suddenly distend the stomach without giving tone, and, in the way usually made, are injurious, from the grease they contain; and which, from the heat it is subjected to, is much disposed to create acidity. I know a lady who ascribes her relief from sick headache, in part, to her leaving off the use of this article, of which she had been fond, and now enjoys excellent health. The best gravy of all roasted meat is its own liquor. An invalid's stomach is better without any. The rancid fried liquid fat, passing under the name of gravy, is ruinous to the stomach of those subject to sick headache.

Vinegar pickles must be shunned. But mustard and

horseradish may be safely eaten : they are gently stimulating, and, in an habitual colic, arising from gout, I have known the latter eaten, at all hours, with the most marked benefit. The discovery of its utility was accidental. Vegetable acids of all kinds, and fruits, are highly injurious. Some of the latter may be more particularly hurtful on account of the difficult digestion of their skins. Cherries in one case, and apples in another, excited severe attacks of the disease. I have also known them to excite attacks of chronic rheumatism and gout.

It will be observed that I have said nothing about *deserts*. I proscribe them all. There can, indeed, be no objection to plain puddings made of rice, bread, biscuit, or potatoes, provided the butter in them is not found to disagree with the stomach, and provided they are eaten sparingly, and after a moderate dinner. Calves-feet jelly is equally innocent, and may be taken to the extent of a glass with safety. A plain apple-pye, with well baked and very light crust, may also be occasionally eaten, with the same caution as to quantity. But I hold up both hands against rich pastry. It is death to a stomach subject to the derangement of nerves producing sick headache. The invalid is, however, better without any desert. Granting that the articles may be in themselves innocent, yet they may be injurious by their bulk, and by disagreeing with those constituting the substantial part of the dinner. Besides, the stomach acts with most vigour when employed in digesting the fewest articles ; and, therefore, it is wrong to try its powers by undue exertion, or even to risk its derangement by mixture of food. If any argument be necessary to urge the adoption of this simple diet, and to reconcile the sick to the deprivation of their usual supposed comforts, let it be remembered, that the more steadily they submit to the discipline recommended, the sooner the object of it will be attained. Let them also reflect, that, in exchanging temporary sensual gratification, and consequent suffering, for the habits and food that will, in a short time, prove as agreeable as those they have relinquished, they will also acquire light pleasant

feelings, elasticity and serenity of mind, and all those sensations arising from the enjoyment of continual good health, and freedom from pain; and, above all, for uninterrupted capacity to discharge the duties which their various situations in life may demand. They must, however, bear in mind one of the cardinal rules of philosophising, established by Newton, "that the same causes, under similar circumstances, produce the same effects;" the commentary on which, in the present case, is, that a return to old practices will unquestionably, sooner or later, cause a return of their complaints. I can assure them, however, that they will, in a short time, become reconciled to the rational mode of life recommended, and that they will not only afterwards pursue it from choice, but advise others to adopt it.

Tea and coffee must be taken in great moderation. In place of them for breakfast, a small portion of some of the articles of animal food before mentioned may be substituted, with the addition of sound bottled claret diluted with water, if the acid of this wine should not disagree with the stomach. I have known a long continued and severe headache cured in a gentleman upon his arrival in France, who took claret instead of coffee for breakfast. In the evening a cup of souchong may be taken with safety; but it would be better to omit it, and take a few oysters or a soft boiled egg or two, an hour at least before bedtime. Regular suppers must be wholly laid aside.

One more hint may be necessary. The same principle operates in our conduct in respect to diet as to morals. Many persons are preserved from crimes until tempted. Invalids should, therefore, avoid dinner and supper parties, for they thereby escape the inducement to transgress the rules prescribed for their cure, the importunities and remarks upon their forbearance from the thoughtless and inconsiderate, and the reflections which may prove mortifying to them from seeing others, either in high health, or who, setting bad health at defiance, are eating freely of what they may call the good things before them.

2. *Drinks.* The best solvent for our food is PURE WATER.

That such was the use to which it was intended to be applied, by the benevolent Creator of all things, might be concluded from its universal abundance ; yet, as a substitute for it, the ingenuity of man “has sought out many inventions.” Let every one afflicted with the sick headache be assured of the fact, of the superiority of water as a diluent, and throw aside wine, spirit, and malt liquors. In the winter, if the coldness of the water should prove disagreeable, or give pain when taken, these effects may be prevented by pouring boiling water on toasted bread or biscuit, and permitting the temperature of the water to descend to a degree that may be found pleasant. It may then be taken at meals, or at any other time in the course of the day when required. This toast infusion is far preferable, and more palatable, than that made by infusing a hot toast in cold water. No water can be more pure, or better tasted than that of the Schuylkill, which constitutes the common drink of the people of this city ; but others who may not be blessed with water naturally pure, should, if possible, use distilled water ; the benefit of which the late celebrated Dr. Heberden,* of London, thought might be as great in many chronic complaints of the stomach and bowels, as the most famous mineral waters are in other disorders. Dr. Lamb says he was cured of a sick headache by the use of distilled water, and that he was informed of the same complaint having been relieved in others by using it, particularly by a gentleman more than sixty years of age.† The same author relates several cases of the decided good effects of distilled water in various chronic complaints, as cancer, gout, obstinate cutaneous eruptions, &c.‡ Dr. Adair§ also adds several facts of its medicinal powers. If distilled water be used, the first gallon that comes over should be thrown away. For want of it, the water may be

* Med. Trans. Lond. Vol. I.

† Reports on Regimen in Chronic Diseases, p. 289. London. 1815.

‡ Essay on Constitutional Diseases.

§ Medical Cautions, p. 236.

boiled; and, in both cases, it should be put into an upright churn, without a cover, and agitated for some time, to impregnate it with the air which it loses by either operation, and, for want of which, it has a vapid and peculiar taste. In places where the water is obviously impure, or bad tasted, it ought to be passed through a filtering stone, or, which is better, a filtering apparatus, previously to being drank, and as these are now made in this city at moderate prices, there can be no difficulty on the subject of water. The water drinker will find, after a short trial, that he will never want the luxury of an appetite; the sensibility of the organs of taste increased, and that he will thereby add to the pleasure of eating.

But it must be remembered, that a cardinal point in the cure of all diseases of debility in the stomach, is to take no more drink at meals than is sufficient to promote the solution of the food in its natural solvents, and its passage out of the stomach. Half a pint, or a little more, is enough.

The operation of the good effects of the tender modes of cooking, in France, are prevented by the large draughts taken by the people of that country at dinner: and indigestion is known to be a prevailing disease among them. During the day thirst must be assuaged, either by plain water, or by water impregnated with carbonic acid, the method of doing which is now generally known. Where acidity prevails in the stomach, ten or fifteen grains of the super-carbonates of soda, or of potash, should be added to each glass. Half a tumbler is enough for one draught. More would cause uneasy distention of the stomach. This drink, taken daily, has, in one case, suspended a severe sick headache for several months. The alkali may be dissolved in a wine-glass of milk, and pure water taken after it, if the aerated water cannot be procured.

The water of Ball-town is highly proper for this complaint. That of the Congress Spring, at Saratoga, is also excellent. A bottle may be taken in a day.*

* This water may be procured at various apothecary shops in Philadelphia, in a state of perfect activity.

The tonic effects of malt liquors on the human body, when not contra-indicated by some circumstance, would naturally lead those not acquainted with them to expect that they would be highly beneficial in the present complaint: but they are injurious, from containing more or less free acid,* and must, therefore, be avoided. In particular, I must caution all persons, as well healthy as invalids, from drinking British malt liquors, which I regard as highly pernicious, owing to the artificial and noxious articles substituted for the legitimate ingredients, hops and malt,† or mixed therewith.

Attention to the state of the bowels is of essential importance in this disease. Costiveness not only disposes to its origination, but increases the disposition to frequent attacks of it. The bowels must, therefore, be constantly kept open by the use of occasional doses of medicine, when necessity may require it. The Congress Spring water, at Saratoga, is the best laxative for the purpose: for it is the peculiar property of this admirable water not to weaken like other purgatives. Three tumblers commonly are enough at a time. Where this cannot be procured, rhubarb may be substituted, and, to prevent its giving pain, three or four drops of the essence of peppermint may be added to the dose; or about thirty grains of the root may be cut up and chewed: the effects, when thus used, will be more slow and natural than when a full dose in powder is taken. If there be an aversion to this excellent medicine, Fothergill's pills, or castor oil, may be substituted. Spinach, when in season, simply prepared, and slightly seasoned, should be eaten at dinner, when constipation comes on. Where acidity prevails in the stomach, half a drachm to a drachm of calcined magnesia may be taken in

* This may be proved by the effervescence that takes place upon adding a few grains of calcined magnesia, or carbonate of potash, to a wine-glass of malt liquor. The observation equally applies to all wines.

† Mr. Accum has recently given to the world, ample details of the shocking adulterations of malt liquors, and of other articles of food and drink in England, in his work on culinary poisons.

milk. A more agreeable mode of taking magnesia is dissolved in water by means of carbonic acid gas, to which a small quantity of ginger-syrup is added. Half a pint of the water is a dose.

It would certainly conduce to the promotion of the vigour of the body, or, at least, prevent the increase of muscular relaxation, if the enervating feather bed were laid aside, and mattresses of hair, cotton, or wool, substituted. Of the articles enumerated, hair is best. In summer, a feather bed is an absurdity. Even in winter, a short time will reconcile the most delicate to mattresses, when they will invariably be preferred to feather beds. In my own case, a feverish restlessness is always excited by sleeping three nights in succession on a feather bed, at any season. In winter a blanket may be put over the mattress.

Exercise.

Exercise is an essential remedy in the cure of the sick headache. But under the word *exercise*, so much is comprehended, that it is necessary to enter into detail respecting it. No species of bodily motion, no variety of the species of exercise commonly used will have the desired effect, unless under proper regulations, and in conjunction with a due observance of the whole system of conduct laid down in the present set of directions. It is only one of the means prescribed, and may be defeated by, or even interfere with, the rest that are prescribed, by being improperly used, or by inattention to other directions. The exercise must be in the open air. If taken in the house, it fatigues without effecting any change in the system. Riding on horseback, on account of the agitation of the internal viscera, is, of all others, the most proper, and should be constantly taken, every morning, when the weather will permit. A long journey is much preferable to daily short rides at home, on account of the exhilarating and medicinal effects of the continued change of scene and of air, on the system. Occasional stops should be made, and exer-

cise on foot taken. Exercise, however, alone, will not cure or prevent the disease, which is known to affect persons of the most active dispositions, and possessing considerable muscular vigour.

Females may swing the leads, or find some other healthy bodily exercise. Fatigue, whether from out-door exercise, or domestic employment, must be carefully avoided. If it be not convenient to take a long journey, daily rides at home, or walking exercise, may be substituted. Some business, or object of investigation, ought always to be had in view when exercise is taken, as a visit to a friend, the local topography or geology, or botany of the country, &c. &c. To this must be added gentle frictions on the side, and region of the stomach, and bowels, with the flesh-brush or flannel, for a few minutes every morning before rising. The benefit of this remedy though slow, is certain.

The passions of the mind must be kept under with great care. Every mental irritation will add strength to the disease, and retard the wholesome operation of the remedies prescribed for its cure. The common effect of giving way to any provocation, for fretting, peevishness, or resentment, is an attack of the complaint. A determination should be made to overcome this disposition. One effect of the system of diet recommended for the cure of the complaint, is a happy revolution in the temper, from great irritability to philosophic endurance of the little evils of life, and the power of self-command. Every source of domestic irritation should if possible, be avoided.

Change of Air.

A powerful remedy, in the cure of this disease, is a change of air. The influence of the air of a place, in bringing on diseases, is evident from a variety of facts; and the freedom from their attack that is obtained by a change of air, and removal of residence, is no less indisputable. In the case of acute fevers, of the low kind, this is very perceptible.* In the instance of chronic complaints, the effect

* In the war of the American revolution, the sick soldiers, ill with the

is no less certain, though more gradual; and here I may remark, that, notwithstanding the great advances made in medicine and chemistry, in Europe and the United States, within the last thirty years, the problem of explaining the rationale of this simple fact remains unsolved. The common atmosphere of almost every part of the world has been examined by the eudiometer; that of places enjoying the most uninterrupted health, and that of others notorious for their morbid influence upon the inhabitants, on land and sea, on high mountains and in deep pits; and yet the air of those different places has been found, by analysis, so nearly alike, that it is impossible to account for either the morbid or healthy effects they produce on the human body, from the difference in their chemical composition. The fact is, nevertheless, certain. Remove a yellow, bloated, flaccid, debilitated person from a rice swamp, or the marshy districts of our sea-coast or rivers, to a healthy mountainous situation, and he will be so changed in a month as to be scarcely known by those who had seen him when sick. The perfection of the instrument used for the analysis of air, may some day enable us to explain the interesting fact.

In the sick headache a striking effect of the change of air occurred in a gentleman of Philadelphia, who, from his sixteenth year, had been subject thereto, and in whom, until he had passed his fortieth year, it annually increased in force and frequency, so as to render his life miserable. A few years since he removed from the small and confined house, in which he had lived for many years, to one of larger size, having a spacious garden; and the consequence was, that, in the course of two years, his headache be-

typhus fever, were removed from the hospital into an orchard with the most decided good effects. The lady of a medical gentleman, (and a native of England) who had been reduced to the lowest state of existence by a seasoning fever in Jamaica, was removed in a covered bed, carried on a frame by men, from a town on the sea-coast to the country, at night, and felt the first sensation of returning health after a few minutes' breathing the refreshing air from the mountains, to which she was removed.—This fact I had first from the lady herself, and afterwards from her husband.

came much less frequent, and his general health improved.*

Diseased teeth frequently excite this disease. In the commencement of a cure, therefore, all stumps that give occasional pain, and all hollow teeth not to be rendered useful by plugging, should be extracted. Slight decays in other teeth should be cut out, and the cavities plugged.

Early hours are essential to the cure of the complaint. This refers to bed-time and rising; and the invalid should make it a point never to indulge in the unsound sleep that is apt to follow lying in bed in the morning, after being awake some time. A headache almost invariably ensues, with the loss of that refreshing sensation arising from the sound repose of the preceding night.

A thick cotton night-cap, or flannel cap, lined with muslin, should be constantly worn at night, in cool weather, in order to preserve an uniformity of temperature of the head with the rest of the body.

Cold feet frequently excite the disease. Care must be taken, therefore, to guard the feet from cold and wet by cork-soled shoes, which are now made with great neatness, and by wearing warm stockings. Worsted or flannel socks should also be worn at night when going to bed. They should be pulled off in the course of the night, when the warmth of the body has become equally diffused.

No invalid should sleep with a fire in the chamber: for the change of temperature that takes place in the course of the night, from the fire going out, disposes the system to catarrh, and every such indisposition retards the cure of the disease. This remark does not apply to Canada, where the severity of the cold in winter renders the preservation of an uniform temperature, in the whole house, an object of unceasing attention. The proper practice is, to have a fire kindled, early in the morning, in a sheet-iron stove, which heats quickly, or to go into an adjoining room, where there is a fire, to dress by.

* His wife, also, has been entirely relieved from a painful rheumatic affection, under which she had for a long time laboured.

If bed-curtains be used, they should not be closed, in order to prevent the breathing a confined atmosphere, which would be caused by surrounding the bed with them, and which would tend to perpetuate the disease.

No one who values the preservation of a vigorous state of the surface, or wishes to prevent the gradual diminution of its tone, should ever permit a warming pan to enter the bed. In cases of peculiar natural delicacy of constitution, a flannel gown may be used to sleep in. One of the surest methods to invigorate the skin, and to prevent a disposition to take cold, is to rub some part of the body every morning on rising with a *coarse* towel dipped in cold water. The refreshing sensation arising from this practice is so great, that no one who tries it will deprive himself of the gratification. The well known sympathy between the surface and the stomach, authorizes a belief, that the practice would prove a powerful auxiliary to the system before recommended for the cure of the sick headache.

Treatment of an attack of the Complaint.

If the disease announce its approach, which it sometimes does, by certain premonitory signs, as heaviness of the eyes, or confusion of the head, no time ought to be lost in arresting its progress. If the prevalence of an acid or of bile in the stomach be known, attention must be paid to their removal. This direction also applies, even if the disease be found to exist on awaking. If the first be present, twenty or thirty grains of calcined magnesia, or ten or fifteen grains of super-carbonate of soda or of potash, may be taken in a tumbler of natural* or artificial seltzer water; or, if those waters are not to be procured, the magnesia or alkalis may be dissolved in new milk or gum-arabic water: to both, the addition of orgeat,† syrup of sugar, or of ginger, will render the draught more agreeable.

Bile is to be removed by an emetic of ipecacuanha, as

* This can be often purchased of merchants in the Amsterdam trade.

† This pleasant syrup may be procured at any of the French confectioners in Philadelphia.

recommended above; after which, if relief be not obtained, fifteen, twenty, or thirty drops of laudanum may be taken in half a wine-glassful of water, with the addition of a teaspoonful of compound spirit of lavender, without sugar or syrup, and sleep encouraged by retiring to bed in a dark room. If, on awaking, the headache should not have disappeared, its removal will be promoted by the person remaining in bed, and repeating the dose. It is better, however, to take enough at first, to insure a sound sleep for several hours; after which it commonly happens that no symptom of the disease remains, except a slight confusion of the head, arising from the effects of the laudanum: but this will disappear in a short time, especially if a cup of clear, strong coffee be taken without sugar or cream.

In this way relief of present symptoms will be certain, and by repeating the foregoing process a few times, when the attack returns, it will be shortened, the habit of the disease be broken; and by due care to avoid the causes that excite it, and by the use of the medicines, diet, and regimen recommended, its cure may be effected.

ART. II. *An account of an Epidemic Fever which has prevailed in certain parts of Virginia for the last eight years.* By JNO. L. MILLER, M. D. of Brunswick, Va.

THROUGH the medium of your Journal, I take the liberty to present to the public, some account of an epidemic, which has been the scourge of this, and other parts of Virginia, for the last eight years. No disease, perhaps, ever attracted more of the attention of the medical men among us, or on which at one time a greater contrariety of opinion existed, in relation both to its pathology and treatment. The only point indeed, on which we at all agreed, was as to the intractability of its nature, and the vast degree of mortality it produced. It proved in the commencement,

when less perfectly understood, totally unmanageable, or, at least, so much so, that it is computed nearly four fifths perished of all who were attacked.

The disease presented two very different aspects. The inflammatory form is the one which I shall first describe, and next proceed to notice the typhoid, a shape which it also assumed.

In 1814, it first appeared epidemically, though cases of it were met with a year or two previously. It has been designated, according to the views entertained of it by practitioners—some calling it peripneumonia typhoides, and others bilious inflammatory pleurisy. That it exhibited each of these characters in different positions, seems sufficiently probable. But whatever it might have been elsewhere, it was undoubtedly in the section of the country to which my observations were confined, a disease of high action, or in other words, an inflammatory bilious pleurisy. Why it should have put on two distinct characters in different parts of the country, and in parts almost in the same neighbourhood, I feel myself at a loss to determine. Yet such is the fact. When it first broke out in the winter of 1814 and 15, it was generally ushered in with a chill, which in a few hours, and sometimes in a shorter time, was succeeded by pains very acute in some parts of the thorax. The head, too, was frequently affected with severe pain, the throat with soreness and swelling, in many cases, both internally and externally, sometimes so sudden as to suffocate the patient in a few hours, or before the nearest medical assistance could be procured. There was also delirium, which not unfrequently became highly distressing. The pulse was generally strong and remarkably hard and tense, through the whole course of an attack, though in other instances, it was slow and depressed, the skin dry and hot, the tongue foul, parched, &c. I often observed in those cases in which the thorax was much affected, that the throat escaped, and conversely. Thus I have seen the disease fall with its whole force on the throat, producing considerable tumefaction of the tonsils, and parotid glands. The cases

in which the chest was affected were attended with a distressing cough with sometimes a spitting of blood. In some instances the cough was dry without expectoration in any stage. The chest was the chief seat of pain, which sometimes was felt in the breast alone, sometimes in the left side, though more frequently, I thought, in the right. The throat was the next part most frequently affected—occasionally the pain would be in the ear only, producing the most excruciating agony—and sometimes it fell on the teeth and jaws. No part of the body scarcely was exempt from it. I have heard of the disease coming on with a pain in the finger or toe, or in other parts of the extremities, and quickly proving fatal. No case occurred in which the patient did not continue to discharge immense quantities of bile throughout the attack. In this form, the disease continued to prevail extensively, from 1814 to 1819, in the winter and spring, at which latter period, it changed its type to one which will shortly be described.

Concerning the treatment, I can safely say, that I have never seen a disease of the same violence more easily cured. The plan which I pursued with very general success, was to commence with plentiful bleeding, if called within the first three or four days of the sickness. The bleeding was carried to such an extent as to make the patient feel a tendency to *deliquium*, and repeated as often as the pulse seemed to require. The blood drawn in every case indicated the existence of high inflammatory action. After bleeding, recourse was had to antimonial emetics, which never failed to discharge large quantities of bile, with very great relief to all the painful symptoms. Where the emetic did not operate on the bowels, ten or fifteen grains of calomel were given, the action of which was promoted by a dose of castor oil, or some of the neutral salts. As soon as the *primæ viæ* were cleansed, I began to excite a steady perspiration, and in doing so, I combined as much calomel with the common antimonial powder, as was necessary also, to produce and keep up a gentle and moderate ptyalism. Warm vinegar whey was given as a constant drink.

The inflammatory action being somewhat reduced, blisters were applied to the seat of the pain, whether the side, breast or throat, or any other part of the body. I never saw a patient sweated freely, that was not considerably relieved, and I found a salivation almost infallible as to the ultimate cure. In this way I treated several hundred cases with great success. With the exception of one case, which was protracted, and attended with such symptoms of debility as to excite doubts about its propriety, I used the lancet freely. Even here a profuse hemorrhage from the nose, which happily came on, relieved the patient in a short time, and he finally recovered. To show the extent to which it was sometimes necessary to deplete, I will observe, that I had myself a very violent attack of the disease, and in four days was bled nine times copiously. The four last bleedings were performed in one night, and to such an extent as to produce fainting each time. I was the patient of my friend Dr. Jno. R. Lucas.

In the form I have described, the disease continued to prevail in the winter and spring months only, until the spring of 1819, at which time, as previously stated, the scene was entirely changed, and it assumed a different form, requiring a very opposite method of treatment. Thus modified, it has been prevailing for the last three years extensively in the counties of Brunswick, Mecklenburg, Lunenburg, and a part of the state of North Carolina—and according to the best information, in the mountainous parts of Virginia and some of the Western States. In the counties above named, it proved to be a very dangerous, and in some places a very destructive disease. Much difference of opinion existed here also, among the faculty, as to its nature and treatment, which probably might be owing to the varied guises which the disease exhibited in different parts of the country. Where I reside, it appeared in a large majority of cases in its most concentrated forms,—while in other parts, to which my practice occasionally extended, I witnessed many cases exceedingly mild, requiring only very lenient measures. Cases of this kind, often occurred in the

same neighbourhood, and even in the same families, with others of the most malignant character.

My observations have been confined principally to the southern part of the county of Brunswick, eastern part of the county of Mecklenburg, and northern part of Warren in the state of North Carolina. Within this scope the disease prevailed violently, and among a very large proportion of the population. This section of country has nothing in it ostensibly, to render it unhealthy; but, on the contrary, it is high, broken, and free from marshes, with few sources of miasmata, except immediately on the rivers Roanoke and Meherrin, which render it difficult to account for its prevailing more extensively than in places exposed to such exhalations. On the river Roanoke on the south, and Meherrin on the north, I witnessed much less of the disease than in the intermediate space, and when met with on the shores of these rivers; so far from wearing a more violent form, as might be expected, it was, according to my observations, milder and yielded much more readily to remedies less active. The lower counties of Virginia also, where there is an abundant source of exhalations giving rise to a great deal of sickness in ordinary seasons, altogether escaped,—while the mountainous districts suffered extremely. This circumstance affords to the medical philosopher an ample field for the exercise of his speculative talents, on which, however, I shall not venture.

Approaching from the west, the disease first presented itself to my view in the month of April 1819, with symptoms of extreme violence. The spring was much cooler than had been recollected for several years previously, and vegetation consequently more than commonly backward.

The patient, generally, in the first stage of an attack, complained of lassitude, weariness with slight chilliness, and in some instances had a severe ague, which in a few hours and sometimes in a few moments, was succeeded by an acute pain in the head, breast and side. The pain sometimes was fixed in the head and breast only—sometimes in the head and side, and sometimes all three were severely af-

fects : some had a violent cough and bloody expectoration from the commencement—some no cough or very little, and some again had a dry hacking cough without any expectoration. The pulse was, in the early stage, large and full on first feeling it, without the least hardness—and very compressible.

After a few days continuance, unless checked by an early administration of appropriate remedies, it assumed all the symptoms of genuine typhous fever, attended with a low muttering delirium, or if delirium was absent a complete stupor. Deafness, and even a partial or entire loss of sight, took place in some few cases. There was a weak, frequent and faltering pulse with cold clammy sweats, especially of the extremities, with a blackness of the tongue and fauces.

In all cases large quantities of bile were discharged, of various colours, as bluish, green and black, attended very often with a yellow colour of the skin, sometimes with a livid dark appearance about the face and neck, and occasionally black and bluish spots on various parts of the body. These latter appearances occurred only now and then in the disease as it prevailed in the winter and spring, but quite frequently in the summer form of it. As the weather became uniformly warm, the disease lost its pulmonary symptoms, and prevailed as a typhoid bilious fever, without any particular local uneasiness, except a pain in the head, neck and extremities, which generally disappeared in a few days. Commonly it was ushered in with a chill, pain of the head and back of the neck, an aching in the limbs, followed by fever, great heat and dryness of the skin, aridness of the tongue and fauces—pulse at the commencement somewhat full and open—though as in the winter form, would yield in every case to the same moderate degree of pressure. As the disease advanced, the pulse increased in frequency, and at the same time gradually diminished in force. A low delirium would come on, at other times a stupor or coma of the most profound kind, to such a degree as to resist in some cases the strongest stimulants internally administered and externally applied.

When the patient was not comatose he was delirious, with incessant and fatiguing watchfulness, tremors of the hands and tongue, and frequently of the whole body, occasionally subsultus tendinum, and in the last stage a blackness and dryness of the tongue and fauces to such an extent, as to render deglutition almost impossible. The blackness sometimes extended as far down the throat as could be seen. There were in addition to these symptoms, as the disease prevailed in the winter and spring, profuse clammy sweats, attended with coldness of the upper and lower extremities, &c.

The fever did not always make this gradual approach. In many cases, after one, two, and sometimes three chills, and subsequent febrile paroxysms, it would suddenly part with every external mark of such condition, and end in a coldness of the extremities, frequently of the whole surface, and in stupor to such an extent, as sometimes to render the patient utterly insensible. This comatose state, which was of frequent occurrence, I have never observed to last longer than three days, and it very often disappeared in a much shorter time. Though in the generality of cases the disease pursued a milder and more protracted course than the one described, it occasionally put on a more malignant aspect. In this latter shape, which did not very often occur, the patient, without any previous admonitions, in a state of perfect health, apparently, was attacked with giddiness and pain of the head, depriving him in an instant of reason, sensation, and the power of voluntary motion, attended by cold sweats, cold extremities, weak, soft pulse, and complete stupor. In a few instances, the attack came on with convulsions, following each other in rapid succession. These cases were confined to young persons and small children. I have known such to be taken in this way when employed in their daily occupations or juvenile amusements. In the several forms of the disease, there was at times great irritability of the stomach, rejecting every thing thrown into it. This gastric irritability was attended, in several cases, with a pain

and burning heat of the epigastrium, an orange yellowness of the whole surface of the body, with an ejection of black matter in considerable quantities, of that kind described as characteristic of yellow fever. Three of these cases occurred in my practice, all of which recovered, and others in the practice of another medical gentleman, not far distant from me.*

During the summer season, whenever the weather changed suddenly from heat to cold, (which is a common occurrence here) the fever was always attended with symptoms of pulmonary affection, which disappeared when the weather became warm. It is by no means designed to convey an impression, that every case assumed this form, and put on uniformly all the symptoms enumerated. It presented various shades or degrees of violence, from a very slight indisposition to the severest degree of malignancy—and almost every disease, or slight indisposition, which made its attack during this sickly period, wore the appearance of the prevailing epidemic.

The causes which seemed most generally to put into operation the predisposition to the disease, were, loss of sleep, nursing, grief, fatigue, when carried to any extent, injudicious depletion—and in short, any thing calculated to debilitate the system. I saw nothing to justify the opinion of its being contagious. But, on the contrary, I had abundant reason to believe it void of any such properties. No description of persons seemed to be entirely exempted from its attacks, though old people, of both sexes, most generally escaped. When, however, they became the subjects of it, they almost uniformly died—which, perhaps, may, in part, be ascribed to their aversion to the remedies. Drunkards seemed also very generally to escape. Negroes were affected in much the largest proportion, and with much more violence. The strong and robust were pecu-

* Two cases occurred in ladies during the period of lactation, in which a perfectly green fluid was discharged from the breasts: one recovered and the other died. A discharge of perfectly yellow serum from blistered surfaces, was quite common in both forms of the disease.

liably liable to it—males more frequently than females, and adults more than children. The proportion of the latter to the former was extremely small.

As has been before remarked, much contrariety of opinion existed relative to the true nature of the disease, and consequently a very great difference in the methods of treatment. From the immense discharge of bile which took place in every instance, it was supposed by respectable practitioners to be the common bilious remittent of an inflammatory type, and managed accordingly. But from many circumstances attendant on the disease, together with the great prostration of the system in the majority of cases, in connexion with the very general success of a different course of practice, I am compelled to think otherwise, with respect to the summer and autumnal forms of it.

As to the bilious nature of the disease, there cannot be the smallest doubt. But I have always considered it a typhoid state of bilious fever, and in its concentrated forms bearing a strict analogy to those fevers described by West Indian writers, under the name of typhus icterodes. The burning heat and pain in the region of the stomach, the orange yellowness of the whole surface of the body, together with the black vomit, are surely appearances which strikingly illustrate the analogy with yellow fever. These were symptoms often to be met with. Had such cases occurred on the banks of a river, or in the vicinity of marshes, (situations calculated to produce fevers of this sort) our surprise would not be excited. But that they should have occurred in positions so very different, and in such as have heretofore been considered as singularly healthy, is truly wonderful and inexplicable. During this epidemic, every disease seemed to “wear its livery.” The smallest scratch on any part of the body, any wound made by accident, or by surgical operations, in a short time put on a gangrenous and sloughing condition, and proved extremely obstinate, requiring in addition to local applications, the exhibition of such medicines as were used for the cure of the prevailing fever—as bark, wine, &c. To such extent, indeed, was

this gangrenous disposition, (if I may be allowed the expression) that surgical operations of any description became either dangerous or very troublesome. In corroboration of this fact, I shall state an extraordinary case that occurred in my practice, and was witnessed by two other medical gentlemen who attended it with me. A young man, of a sound and vigorous constitution, who had for five years or more laboured under an aneurism of the femoral artery, produced by a puncture of that vessel with a penknife, was, when in perfect health to all appearance, engaged in play with a party of females, one of whom accidentally sitting on the tumour, ruptured it, occasioning an effusion of blood through the whole cellular substance of the thigh. The next day, when I saw him, the limb below the aneurism had become cold, not the slightest pulsation was to be felt, and every symptom existed of mortification fast advancing. Amputation was accordingly performed. The other leg (though entirely sound previous to the accident) was soon after observed to be covered over with black spots, as were also the integuments of the abdomen—and the foot ultimately became black and mortified. Nothing like adhesion took place in the amputated limb. But the wound remained exceedingly flaccid—the ligatures giving way—he died in a few days in a complete state of mortification, from his abdomen downwards.

In regard to the treatment of this fever, there was, as before noticed, a great difference of opinion. Those who considered it inflammatory bled freely, until arrested by symptoms of debility—while others conceiving it to be inflammatory in the first stage, and typhoid in its latter, bled at first, and stimulated moderately towards its close—both of which methods (as far as I had an opportunity of determining,) proved unsuccessful. I do not indeed recollect to have seen a single patient recover, who had been bled to such an extent as to produce any impression upon the system. The same observation was made by another practitioner of extensive experience in the disease, with the exception of two cases, which proved extremely obstinate in

consequence of the depletion, and required afterwards uncommon efforts and the most assiduous attention.

My practice was as I am now to state. When the disease assumed the form of typhoid pneumonia, I commenced with the use of antimonial emetics, which generally occasioned immediate relief from the pain in the side, head and breast, or in any other part which might happen to be the seat of it. The emetic was repeated as often as the pain returned, unless the patient was too much debilitated by the previous operation. I have given as many as six emetics to the same patient, which would sometimes check the disease at once when they operated well. But where large accumulations of bile existed, there was an uncommon torpor or insensibility of the stomach to the impression of such medicines. One of my patients took seventy grains of tartar emetic, of the best quality, which operated only three times moderately, and a larger quantity than this was administered by some of my medical friends. Deeply impressed with the necessity of emetics, I would have hazarded any thing to bring on vomiting. The bowels were next cleansed out by large and frequently repeated doses of calomel and castor oil. They were also generally torpid, and required immense doses to produce the desired effect. The *primæ viæ* being thus evacuated, I had recourse to the Dover's powder united with camphor, given every few hours, with wine whey or vinegar whey, infusion of serpentaria, &c. These medicines almost uniformly produced a free perspiration, which was kept up as long as the system would bear it, or the violence of the pain continued. Blisters were freely applied to the seat of pain. As expectorants, I used the brown mixture,* or a solution of gum ammoniac and extract of liquorice, keeping up at the same time a moisture on the surface with the articles already mentioned. The case not being arrested by this treatment, it generally ran on to the lowest grade of typhous fever,

* A solution of the extract of liquorice, with antimonial wine, laudanum, &c.

with a small, weak and frequent pulse, tremors, delirium, subsultus, &c. As soon as the system reached this point, I gave the Peruvian bark and elixir vitriol, in as large doses as the stomach could bear, or the camphorated mixture, vol. alkali, ether, &c —and whenever these seemed insufficient, and cold sweats and cold extremities appeared, I administered the same remedies also by injections. In addition to the above, I applied sinapisms to the head or extremities, and in desperate cases to nearly the whole surface of the body, renewed every three or four hours, and especially if the patient was comatose. Frictions with spirit of turpentine or red pepper tea, were sometimes employed. Cloths dipped in boiling water, proved useful excitants—and in some apparently hopeless cases, I was successful in rousing the patient from a state of stupor, bordering on death, by the employment of actual cautery, repeatedly applied to several parts of the body. This seemingly cruel treatment was very successful in the hands of several other practitioners besides myself. Much reliance was placed, in this prostrate state of the system, on the liberal exhibition of toddy, made of some species of ardent spirits. I have given in this form from two pints to a gallon of rum, or brandy, or whiskey, in the twenty-four hours, and with the happiest effects.

In the summer, when the disease laid aside its pulmonary form, and prevailed as a typhoid bilious fever, as above described, antimonial emetics were resorted to at the commencement, succeeded by cathartics of calomel and jalap, or calomel and castor oil, or the neutral salts, until the bowels were sufficiently evacuated, or symptoms of debility made their appearance, when recourse was had to the bark, elixir vitriol, camphor, vol. alkali, and all the remedies used in the latter stage of the winter disease, as recently noticed, carried to the same extent, and with the same success. During this season of the year, the appearances of prostration were much greater, and occurred at an earlier stage. Coma was much more frequent, and required a more early and extensive use of the stimulant and tonic medicines.

Now and then, there were cases in which neither emetics nor cathartics could be used. These were marked by the sudden accession of extreme debility, attended by the loss of the power of voluntary motion, cold sweats, cold extremities, weak pulse, coma, &c. In these cases evacuations could not be borne without great danger of immediate death. The best practice here, was, undoubtedly to recur, at once, to the most intrepid employment of stimulants, and to all the other measures which have been mentioned, as calculated to sustain and invigorate the enfeebled powers of the system.

I have said nothing in favour of the lancet as a remedy in any of the cases of this form of the epidemic, because I had frequent opportunities of testing its efficacy, and uniformly found it either an unnecessary, a dangerous, or a fatal resort. When we first met with it, we all, (unapprised at the moment of the change of the disease from an inflammatory to a typhoid character,) commenced the treatment with blood letting—but in a short time, were convinced of our error, and availed ourselves of the first opportunity that occurred to acknowledge it by a change of practice. The issue of every case, treated by the lancet, in my practice, and that of several others, was unfortunate. The three first cases I met with of the pneumonic form, I bled freely, the result of which, was a speedy termination in death, in consequence of which the lancet was laid aside. Fifteen cases occurred in a particular part of the country, which were treated upon the depleting plan, and all died—twenty in another, and I have authority to say, that at least one hundred and fifty died under it in another district. Such mortality is of itself sufficient to prove the impropriety of the practice.

This fever seemed to observe no particular period as regards its termination, sometimes reaching a crisis on or before the eleventh day, but generally it was more protracted.

No disease, perhaps, required more careful attention, and I have never seen one, in which relapses were so frequent. It was by no means uncommon for several to take place, before entire recovery. I have known, indeed, as many as

four or five distinct attacks in the course of a few months, and each succeeding one marked by additional violence. If the practice here detailed, be unusual and unsupported by authority, when carried to the extent I have advised, I must plead in its favour, the great success of it and the destructive consequences of a different method. It has met with much opposition. But I have the satisfaction to believe that many of those who were at first among its most violent opposers, are now adopting it with a perfect conviction of its efficacy. From the beneficial results of it, and particularly in those cases attended with great irritability of stomach and black vomitings so exactly resembling the typhoid state of yellow fever, I look forward, with some confidence, to the time, when, (if pursued intrepidly,) it will prove not less successful in that disease, more particularly as it prevails in our southern sea-port towns.

THE ENSUING article, originally appeared in the shape of a pamphlet. But as the circulation of it was limited, and it probably has been seen by few of our readers, we have great pleasure in obliging its distinguished author by a republication of it, and shall be proud to enumerate him among our regular correspondents. EDITOR.

ART. III. *Observations on the Secale Cornutum, or Ergot—with Directions for its use in Parturition.* By JOHN STEARNS, M. D. of New York.

WE have no information when the *secale cornutum*, or ergot, was first introduced into medicinal use. It may have experienced the vicissitudes of other medicines, whose alternate rise and fall, not being known to succeeding ages, have been repeatedly promulgated to the world as new discoveries. It has been recently supposed to have constituted the grand arcanum of a Dutch accoucheur in Holland, who,

in 1747, acquired great fame for his success in obstetric practice. It was subsequently used in France, till it was interdicted by a legislative act, in 1774. Not being subjected to experimental tests, nor prescribed by scientific rules, it was probably exhibited in quantities, and at times, very unfavourable to its safety and success. The injurious effects of such vague practice, and the prevalent opinion that it possessed deleterious qualities, were the probable reasons that caused its rejection.

It was not till the year 1807, that the ergot ever appeared before the public in a form to arrest the attention of medical men. Some years previous to this I was informed of the powerful effects produced by this article in the hands of some ignorant Scotch women in the county of Washington. Determined to try its efficacy, I procured a quantity from a field of rye. My information was such as to impress upon my mind the necessity of extreme caution in my first experiments. The continued influence of this impression upon my subsequent practice, has been a source of much consoling reflection. It has tended to prevent those fatal errors which have so often occurred, and which I trust will be satisfactorily explained in the ensuing remarks.

The frequent recurrence of cases in my obstetric practice afforded ample opportunities of executing my design to perfect satisfaction. I gave it in powder and decoction, but the superior efficacy and convenience of the latter soon gave it the decided preference—and in no instance did I ever give more at a dose than ten grains—the ordinary quantity was much less. Its sudden and powerful operation upon the uterus, early taught me the necessity of those rules which I subsequently published, and which experience has since amply confirmed. The publication of my letter to Dr. Akerly, in 1807, produced an immense number of applications from remote practitioners. I immediately forwarded to each samples of the ergot, with directions for its use. By these means it was sooner introduced into general practice than I anticipated. Its use was much extended in New England, by the judicious dissertation of Dr. Prescott.

read before the Massachusetts Medical Society, in 1813. The New England Journal of Medicine and Surgery contained the opinions and experience of several practitioners in that section of country. While it met with general approbation and success, some ascribed to it the fatality of still born children—and a few, probably influenced by the prejudices of the French, considered it deleterious. The latter opinion was supported by Dr. Mann, surgeon general of the northern army, in a series of essays published in 1813, and intended to prove that the pneumonia typhodes, then prevalent in the country, derived its origin from this source. This was amply refuted by Dr. Henry S. Waterhouse, in a paper published in a New England Journal.*

The same opinion has been reiterated in some periodical works, and inaugural dissertations, which the young authors imagined they had fortified by experiments upon insects. But it is not by such analogies that important principles in medicine are to be settled. We must refer to the human system as the only correct test for experiments of this sort. And here we find rash practitioners exhibiting the ergot by ounces, to the extent of a quarter of a pound, in less than twenty-four hours; and in some instances of amenorrhœa and illegitimate impregnation, it has been continued in large quantities for weeks and months, without producing any deleterious effects upon the females, or upon the fœtus in utero. The suggestion of its deleterious influence upon the child, when cautiously given in ordinary parturition, is undeserving of serious notice. Those who exhibit this article in such enormous quantities, and at times and under circumstances unfavourable to its success, and then proclaim it to be “fatal,” or “inert,” are influenced by other motives than a desire to elicit truth. Tried by such practice, opium, mercury, and antimony, would long since have been condemned and rejected from the materia medica, and the last was actually consigned to this fate, by the civil authorities of France, after its fatal effects had been *fully proved* by the bold empiricism of that day.

* N. E. Journal, vol. 5. p. 235.

In the accounts which impute the death of still born infants to the ergot, we do not find that minute detail of symptoms, of the quantities given, and of the times and circumstances of its exhibition, which are necessary to enable us to form a correct opinion of the propriety of the prescription. No one can hesitate to believe, that, under certain circumstances, such must be its inevitable effects. And I most sincerely admonish all those who experience such ill success, entirely to abandon its use. On no principle can a continuation of such practice be justified. I can, however, with much satisfaction affirm, that such has not been the result of my experience, and in no instance has either mother or child sustained any essential injury, which would not have been aggravated by its omission. These remarks are fortified by the testimony of many eminent accoucheurs, whose obstetric practice has been extensive, and most of whom have used it for the last fifteen years with the most complete success.* This discordance of opinion can be explained only by supposing a difference in the circumstances, modes, and times of its exhibition.

It is important, however, to remark, that those cases which indicate the use of the ergot, would have proved hazardous to the life of the mother or child, and peculiarly distressing to both, if it had not been given. When, therefore, these unfavourable effects occur after its exhibition, they are very improperly attributed to the ergot, instead of their real cause, the intrinsic difficulty of the case. It is to prevent these, and to save life, that it ought ever to be prescribed. These effects I have often witnessed, and for this purpose has it frequently been administered by others with equal success. But never, I hope, will this, or any other recommendation of its utility, delude others into the use of it for any other purpose, or under any improper circumstances. If such, in any instance, has been the effect of the opinion that I published in 1807, "that it never produced any bad

* N. E. Journal, *passim*. Med. Rep. 6 vol. N. S. p. 403. Drs. Prescott, Chapman, &c. &c.

effects on the patient," I now solemnly retract it. Its bad effects have been too often asseverated to admit of a doubt. I did not then anticipate the abuses to which it has since been subjected. Should these continue, another legislative interdict would be extremely desirable.

To arrest the evil consequences of such practice, and to restrain the use of the ergot, I published in the 7th vol. of the *New England Journal*, some plain and important rules, which I deem proper to subjoin, with explanatory remarks, and the addition of those cases in which its use is particularly indicated.

1. "It should never be administered where nature is competent to a safe delivery."

In elucidation of this rule it may be observed, that parturition is one continued process from beginning to end; one portion of which, like the links of a chain, necessarily precedes, in close connexion, that which follows, thus preparing in regular succession suitable changes in the parts concerned. If the interference of art interrupt this order of nature, the chain will be broken, and the whole process may be converted into a difficult labour.

2. "It should never be administered until the regular pains have ceased, or are ineffectual, and there is danger to be apprehended from delay."

3. "It should never be administered until the rigidity of the *os tincæ* has subsided, and a perfect relaxation induced."

I am aware, that in my first publication, I intimated that the success of the ergot probably arose from a nausea excited in the stomach, and thence affecting the uterus by sympathy, produced a correspondent relaxation in the rigid fibres of the *os tincæ*. Subsequent experience has not justified this conclusion, and I have always found it necessary in such cases to premise copious bleeding.

4. "It should never be administered in the incipient stages of labour, nor until the *os tincæ* is dilated to the size of a dollar."

The success of the ergot is in no case more evident than in the selection of a suitable time of its exhibition. Although

often given to procure abortion, it does not appear to have succeeded. It also generally fails of complete success when given in the early stage of labour, and before the os uteri is sufficiently dilated and relaxed. The pains induced under these circumstances, often terminate before the labour is fully accomplished. If it is delayed till these favourable changes are produced, its success in promoting the action of the uterus is more certain than tartrite of antimony upon the stomach, or jalap upon the intestines. But while an attentive observation of its effects, under different circumstances, in several hundred cases, have enabled me to predict its precise operation in almost every instance, I feel incompetent to explain why it fails in the one, or succeeds in the other. Its *modus operandi* is a desideratum, to harmonize conflicting opinions, to prevent, in all cases, its injurious effects, and to show why, under certain circumstances, it is inoperative, and under others, powerfully efficacious. Dr. B—— informed me, that he once gave it to a woman before any symptom of labour had appeared, to enable him to perform a journey which this case delayed. In one hour labour actually commenced, and regularly proceeded through its different stages to a safe and expeditious delivery. Had the presentation in this case been wrong, and other circumstances unfavourable, his premature prescription might have been fatal to both mother and child. I therefore seriously admonished him never to repeat it in a similar condition.

5. "It should never be administered in any case of preternatural presentation that will require the fœtus to be turned."

The efficacy of the ergot is fully proved by the peculiarity of pains which it induces. From five to twenty minutes we first discover a bearing down effort of the patient. This gradually increases without the least intermission till the delivery is completed. During such an uninterrupted action of the uterus, all efforts to turn the fœtus must be unavailing and hazardous.

6. "It should never be administered during the continuance of one labour, in larger quantities than thirty grains by

decoction in half a pint of water." A table-spoonful of this given every ten minutes, generally succeeds better than a larger dose. While this quantity produces its most favourable effects upon the uterus, it does not affect the stomach with nausea or vomiting, which sometimes interrupts its successful operation.

Three grains, with a grain of opium, steeped in a gill of water, and a tea-spoonful given every ten minutes, have succeeded in reproducing the interrupted pains of regular labour. I have, therefore, generally preferred it in this form, as being perfectly safe, and exempt from the objections to the incessant forcing pains induced by larger doses.

By a due observance of these negative rules, it will be perceived, that but few cases can occur that will require the ergot; and for several years past I have not found it necessary to administer it oftener than in one for every thirty that I have attended. But so important do I consider it in certain cases, that I always have it ready for use on the occurrence of any emergent symptoms that may render it immediately necessary.

I will now proceed to consider those indications which render its exhibition necessary and important.

The ergot is indicated, and may be administered,

I. When, in lingering labours, the child has descended into the pelvis, the parts dilated and relaxed, the pains having ceased, or being too ineffectual to advance the labour, there is danger to be apprehended from delay, by exhaustion of strength and vital energy from hemorrhage, or other alarming symptoms.

II. When the pains are transferred from the uterus to other parts of the body, or to the whole muscular system, producing general puerperal convulsions.

After premising copious bleeding, the ergot concentrates all these misplaced labour-pains upon the uterus, which it soon restores to its appropriate action, and the convulsions immediately cease. A remarkable instance of its efficacy in these affections, is contained in a letter which I received from Dr. Henry S. Waterhouse, of Franklin county, and is too interesting to be omitted in this place.

“Mrs. L. H., of nervous temperament and delicate habit, aged 19, was, on the 24th of June, 1814, seized with the usual precursory symptoms of parturition. I found her affected with wandering pains of the back and abdomen, some throbbing pain of the head, and a tense pulse, though natural in frequency. The loss of 15 ounces of blood, with fomentations to the abdomen, and a dose of opium, gradually gave her relief, and at evening she fell into a quiet and refreshing sleep. The next morning I was sent for in haste, and was informed, that after a quiet night, she discovered in the morning some symptoms of derangement. She complained of wandering pains in the abdomen, and of a throbbing sensation in her head. These symptoms increased till the most horrid form of puerperal convulsions was brought on, that I ever witnessed. She was constantly muttering things in an incoherent manner—her eyes were rolling from side to side, and turning up in their sockets. She had so frequently bitten her tongue, that the blood was flowing profusely from her mouth—her extremities were of a deadly coldness, and the violent spasms and contractions of the muscles of her limbs, back, abdomen, neck, and lower jaw, were truly alarming. The pulse was natural, but less frequent than in health. With much difficulty her lower extremities were immersed in warm water, and large quantities of the tinctures of opium and assafœtida were forced down. Her abdomen was fomented, and her extremities smartly embrocated with stimulating applications, &c. ; but all to no purpose. There was no hemorrhage, but from the condition of my patient, it was impossible to make that accurate examination per vaginam that I wished. I could, however, ascertain that the os uteri was in a small degree dilated. The circumstances were so urgent that I could not defer the use of means till I could procure a consultation. Her strength was rapidly wasting, pulse small and frequent, breathing laborious, and countenance ghastly. The ergot presented itself to my mind as the only probable means of saving her life. I mixed thirty grains in a small quantity of warm water, and gradually insinuated a table-spoonful between her

teeth, worked it into her mouth, and in two or three minutes she had swallowed it. The effects were almost instantaneous and truly astonishing. Her spasms gave way, the operations of her mind became regular, and she awoke, as she supposed, from a disturbed and painful sleep. She complained of much weariness. A strong cup of tea was given her with some light nourishment, and she soon fell into a quiet sleep. In the evening following, true and forcible labour-pains came on, and I delivered her in a short time with perfect safety."

III. When in the early stages of pregnancy, abortion becomes inevitable, accompanied with profuse hemorrhage and feeble uterine contractions.

IV. When the placenta is retained from a deficiency of contraction.

V. In patients liable to hemorrhage immediately after delivery.

In such cases the ergot may be given as a preventive, a few minutes before the termination of the labour.

VI. When hemorrhage or lochial discharges are too profuse immediately after delivery, and the uterus continues dilated and relaxed without any ability to contract.

I have thus exhibited a general view of the errors often committed in prescribing ergot, of the unfavourable results of such practice, of those cases in which it never ought to be administered, and of the indications which render its exhibition necessary and important. These remarks are derived from actual experience in several hundred cases, and are confirmed by those whose observations have been the most extensive and correct. While there is reason to suspect the influence of prejudice upon the minds of some who oppose its use, their own statements generally admit their very limited opportunities for witnessing its effects, and in some instances, while using it in their first experiments, on which their opinions were founded, that they grossly deviated from every direction calculated to ensure success.

While the frequent occurrence of such abuses is to be deplored, much satisfaction may be derived from the re-

flection, that a prudent and judicious use of this article has in a great variety of instances contributed to save the lives of the mother and child. That such will continue to be its effects when directed by a discreet, judicious, and experienced practitioner, we have the most satisfactory reason to infer from past experience, and from the peculiar properties and operation of the ergot.

CHEMISTRY in its application to Medicine, has probably never rendered more essential service than in the analysis of the articles of the *Materia Medica*. The powers which it has recently displayed in this respect, have exceeded our most sanguine anticipations. By processes the most ingeniously contrived, many of the important medicines have been resolved into their ultimate constituents, and the active and efficient principle thus separated from the crude and inert mass in which it was contained, is presented in a state, or is made by new combinations, suited to a more convenient administration, and in some instances with remedial powers vastly improved.

The best formulæ for these preparations, have been given to the public in a small work, just from the press, by the celebrated Magendie, of Paris, who is always to be found in the van of scientific enterprize. The most valuable of these we have the gratification of now offering to our readers, in a faithful translation, for which we are indebted to the kindness of a friend.—EDITOR.

ART. IV. *Extracts from Magendie's Formulæ, for the Preparation and use of several new Medicines. Translated from the French.* By WILLIAM DARRACH, M. D.

I. MORPHIUM AND THE SALTS OF MORPHIUM.

NOTHING shows more the yet imperfect state of our knowledge of remedies, than the history of opium. By turns it has been extolled as a panacea, and proscribed as an article eminently hurtful. To calm the system and procure sleep,

has been considered its tendency by some—while others have maintained with confidence, that it always excites or stimulates. The latter, observing more attentively the properties of this substance, have distinguished those which are soothing, soporific, stupefying, narcotic, acrid, &c. The chemists of the last century, have accordingly laboured to discover these several properties in the different elements of which opium is composed—and the most celebrated physicians have given the sanction of their distinguished authority to certain preparations of this article, as the laudanum of Sydenham, &c. But where are the facts upon which rest the pretensions of these preparations—and of others also, such as the drops of Rousseau, the tincture of opium, the syrup of Dioscorides, the resinous and the watery extracts, &c.? and where are the grounds of preference when the practitioner employs one of these preparations rather than another?

The sciences mutually support and advance each other. It would have been impossible to divest the subject of uncertainty, without the improvements recently made in the chemical analysis of vegetables, and the happy applications of them to opium.

From the chemical researches on this point, and more particularly those of Messrs. Derosnes, Sertuerner, and Robiquet, it appears, that opium is composed—1st, of a fixed oil; 2d, of a substance analogous to caoutchouc; 3d, of a vegeto-animal substance which has not yet been examined; 4th, of mucilage; 5th, of fecula; 6th, of resin; 7th, of the remains of vegetable fibres; 8th, of narcotin; 9th, of meconic acid; 10th, of the acid discovered by Mr. Robiquet; and lastly of the morphia, which alone will now occupy our attention.

Preparation of Morphia.

To obtain the morphia, Mr. Robiquet exposes to a heat, sustained a quarter of an hour at the boiling point, a mixture made of a small quantity of magnesia, added to a very concentrated solution of opium—ten grains of the magnesia

to a pound of opium. A greyish precipitate in abundance is hereby formed. It is filtered, washed in cold water, and, being well dried, is treated with diluted alcohol, and left to digest some time at a heat below that of ebullition.

In this manner is formed an alcoholic solution of morphia, in small quantity, combined with much colouring matter, which is filtered, and washed in cold alcohol: the precipitate redissolved in alcohol rectified, and in greater quantity, and the solution subjected to a heat kept constantly at the boiling point. This liquor is again filtered while in a state of ebullition, and from it, on cooling, the morphia is obtained—which is deprived, by repeated crystallizations, of its colouring matter.

In the June number, 1820, of the *Annals of Philosophy*, Mr. Thompson has published an analysis of morphia, and submitted also what appears to him an easy method to obtain this base in a state of purity.

From a strong infusion of opium, he produces a precipitate of a brownish white colour, by means of the caustic ammonia—removes the precipitate by filtration—evaporates the solution to one sixth of its volume—mixes here another quantity of ammonia—and thus obtains a second deposit, which is pure morphia. This is received upon a filter—washed in cold water—and, when well drained, is sprinkled with a small quantity of alcohol, which, passing through the filter, carries off a great portion of the colouring matter, and also a small quantity of morphia. This is now dissolved in acetic acid, and the solution treated with a small quantity of ivory black, to deprive it of colour, and is then agitated frequently during the twenty-four hours, and decanted upon a filter. The fluid which passes through into the vessel, being thus rendered entirely colourless, is treated with ammonia, which precipitates the morphia in the form of a white powder. If this base be dissolved in alcohol, and the solution left to evaporate spontaneously, the morphia will reappear in the form of beautiful regular crystals. These crystals are four sided rectangular prisms, per-

fectly white, of a transparency slightly opaline, without odour, and of a taste very bitter.

Action of Morphinum on Man and Animals.

It is difficult to conceive that morphinum constitutes exclusively the narcotic property of opium—that substance, in a pure state, being but little soluble. On this point, there is at present, however, no doubt. Direct experiments have frequently demonstrated the truth of it.

The morphinum, for example, dissolved in oil, produces certainly very decided narcotic effects, though administered in small doses of a quarter or half grain: but when converted into a soluble salt, by union with acetic acid, the narcotic properties become far more manifest. It is now nearly three years, since the acetate, sulphate and the hydrochlorate of morphinum have been employed by me as medicines—and I have found them to possess the advantages without the injurious qualities of opium. The hydrochlorate proved, on my first trials with it, to be less useful than the other salts, and researches into it were therefore discontinued. It would be well, however, to resume an investigation of it.

Preparations of the Acetate and Sulphate of Morphinum.

The acetate of morphinum is made from the distillation of the morphinum, and the acetic acid, in direct combination: the sulphate of morphinum is made in the same manner, substituting the sulphuric for the acetic acid.

It has been an object of study, in making the officinal preparations of these salts, to have them resemble as nearly as possible, the esteemed preparations of opium. With this view the following formula was composed.

Syrup of Morphinum.

℞ Syrup of perfectly clarified sugar, ℥ j.
Acetate of morphinum, gr. ii.

F. S. L. This formula may be substituted for the syrup of Dioscorides; and with great advantage, because the latter preparation is in a great measure arbitrary.

The syrup of morphia is now generally employed in Paris.

Syrup of the Sulphate of Morphia.

℞ Syrup of perfectly refined sugar, ℥ i.

Sulphate of morphia, gr. iv.

The dose is the same as that of the syrup of morphia. When the acetate from use has become less efficient, the sulphate should be substituted. The desired effect is thereby sustained longer, without a necessity of increasing the dose immoderately.

The same practice, as a general rule, would be useful in the employment of the salts of all the alkaline medicines.

Sedative Drops.

Which may be substituted for laudanum, the drops of Rousseau, the tincture of opium, &c.

℞ Acetate of morphia, gr. vii.

Distilled water, $\frac{2}{3}$ i.

Three or four drops of acetic acid, and one drop of alcohol should be added to preserve the salt in a state of solution. The dose of this formula is from six to twenty-four drops.

The sedative drops may be made equally well by means of the sulphate.

Both the above mentioned salts of morphia may also be used in the form of pills,—*opiat*,* potion, or julep—in doses from a quarter to a half grain.

II. NARCOTIN OR MATTER OF DEROSNES.

I cannot be induced, from the researches on this substance, to regard this as a remedy. It being, however, one of the elementary parts of opium, and there having existed, and now continuing to exist much uncertainty about it, some physiological notice will not be out of place. When given in a feeble dose, one grain dissolved in oil, it produces on dogs a state of stupor, which those little habituated to experiments may easily confound with sleep. It is, however, very different. The eyes of the animal remain open, respira-

* We believe that the French mean by this term a species of electrolysis.

tion is not deep as in sleep—and it continues in a dull and motionless state from which it is impossible to rouse it. Death supervenes commonly in twenty-four hours.

Combined with acetic acid, the effects of this article are entirely different: animals can support large doses of it, twenty-four grains for example, without being destroyed—and while they are under its influence, they are affected with convulsions, resembling those produced by camphor—the same symptoms of fright, backward movements with an impossibility to advance, and also, the frothing at the mouth with convulsive action of the jaws, &c.

I have administered the morphia in conjunction with the emetin—and have always found the action of each to exist, independently, their different effects being exhibited at distinct intervals.

A solution of a grain of morphia and narcotin, was put into the wound of a dog. The animal soon exhibited somnolency, and, at moments, the natural sleep which the morphia produces—but at times the stimulating effects of the narcotin were evident, and seemed to struggle in a singular and very remarkable manner with the effects of the morphia. This kind of contest lasted more than a half hour, when the animal slept profoundly, being under the influence, probably, of the morphia only.

Does it not appear reasonable from the above experiments, which I have varied, and with the same results, that the different effects depend on two opposite principles of the opium. This appears to me the more probable, because those who have taken the morphia have none of the excitement produced by the watery extracts of the shops, in which the narcotin and morphia are both found.

Extract of Opium deprived of Narcotin.

M. Robiquet prepares an extract of opium, agreeably to the above views, which appears to have a marked advantage over the common watery extract. The bruised opium is macerated in cold water, filtered, and evaporated to the consistence of a thick syrup. This is then treated with

rectified ether—and the tincture thus formed, after frequent agitations, is decanted and distilled.

This process is repeated until crystals of narcotin are obtained as the residue of the distillation. When the action of the ether is lost, the solution of opium is evaporated to a consistence suitable for pills, and an extract is obtained free from narcotin.

III. EMETIN.

In a memoir presented to the Academy of Sciences, in 1817, M. Pelletier and myself established, by a series of chemical and physiological experiments, that the emetic virtue of the different species of ipecacuanha depends on a peculiar principle, which M. Pelletier has called emetin. And, as this substance is much more active than ipecacuanha itself, and has no disagreeable taste, nor nauseous odour, we have thought, that it might be, on all occasions, substituted for the ipecacuanha with advantage.

Preparation of the Coloured Emetin.

The ipecacuanha, being pulverized, is treated with ether of sixty degrees to dissolve the fatty odorous matter, and when this solvent has ceased to act, the powdered substance is itself exhausted by means of alcohol: the alcoholic tincture is then evaporated in a sand bath, and the extract dissolved in cold water, when it abandons some wax and a little remaining fatty matter. It remains now only to macerate it with some carbonate of magnesia, which deprives it of the gallic acid—then to re-dissolve it in alcohol, and evaporate it to dryness. The emetin, thus prepared, is not, as we had at first believed, entirely pure. It can, however, be used to advantage as a medicine.

It appears in the form of transparent brownish red scales, is almost inodorous, and of a bitter but not nauseous taste, can support without alteration a heat equal to that of boiling water, and is very deliquescent, being in aqueous solution incapable of crystallization.

Physiological properties of Emetin.

In dogs and cats, emetin, in doses of a half grain to two or three grains, produces vomiting, followed sometimes with protracted sleep.

On dogs, when used in greater doses, ten grains for example, the vomiting is repeated—and the animal, instead of returning to a state of health after the soporific effect is over, dies ordinarily within twenty-four hours. On examination of the body, death is found to be produced by a violent inflammation of the substance of the lungs, and the mucous membrane of the alimentary canal from the cardia to the anus. These appearances have the strongest analogy to those which are produced by the tartrate of potass and antimony, described by me in a distinct memoir.* The results are the same, if the emetin be injected into the jugular vein, or simply absorbed from any part whatever of the body.

Action of Emetin on a Healthy Man.

Two grains of emetin swallowed, fasting, produces protracted vomiting followed with a strong disposition to sleep. One fourth of a grain is sometimes sufficient to produce nausea and vomiting.

Action of Emetin on Man in Disease.

This is quite analogous to what takes place on a healthy man, viz. vomiting and alvine evacuations: but more than this, it has a most happy influence on the catarrhal affections, particularly those of a chronic nature.†

The application of the emetin is the same as that of the ipecacuanha.

When given to produce vomiting, four grains of it should be dissolved and administered, at short intervals, in repeated doses. If the solution be administered at once, a sudden expulsion of the medicine from the stomach would be the consequence, without any other effect.

* On the influence of emetics on man and animals.

† See chemical and physiological researches on the ipecacuanha, by Messrs. Magendie and Pelletier. Paris, 1817.

The following electuary may be employed :

℞ Emetin, *gr.* iv.
Weak infusion of orange peel, $\frac{\text{℥}}{3}$ ii.
Syrup of orange flower, $\frac{\text{℥}}{3}$ ss.

The dose of this electuary is a table-spoonful, to be repeated every half hour.

In the chronic pulmonary catarrh, pertussis, and chronic diarrhæa, the following pills may be substituted with advantage, for the pills of ipecacuanha, generally used, viz.

℞ Sugar, $\frac{\text{℥}}{3}$ iv.

Coloured emetin, *gr.* xxxii. to be made into pills of ten grains each.*

They are given, one every two hours : if administered at shorter intervals, they will produce vomiting.

The Emetic Pills of Emetin.

℞ Sugar, $\frac{\text{℥}}{3}$ ii.

Emetin, *gr.* xxxii. to be made into pills of eighteen grains each.

One of these pills, administered fasting, is sufficient to vomit an infant : an adult requires three or four of them.

The syrup of ipecacuanha of the shops may be well replaced, by the following formula :

Syrup of Emetin.

℞ Simple syrup, ℥ i.

Coloured emetin, *gr.* xvi.

IV. PURE EMETIN.

The emetin described in a preceding article is not in a state of purity. It is to the pure emetin, what brown sugar is to the crystallized white sugar. Mr. Pelletier, in a research not yet terminated, as to its chemical part, has just separated entirely the active substance of the ipecacuanha. It is a vegetable alkali, of which the principal characters are the following.

* It is a common practice to colour these pills, to distinguish them from those of the ipecacuanha.

Preparation of pure Emetin.

To obtain the emetin in a pure state, the calcined magnesia must be substituted for the carbonate, and in a sufficient quantity to take up the acid which exists in a free state in the solution, and also to separate and unite with that which is found combined with the emetin.

The emetin disengaged, and rendered less soluble, is precipitated and mixed with an excess of magnesia. This precipitate, washed in a small quantity of very cold water, which unites with the colouring matter combined with the magnesia, should be dried with care, and treated with alcohol to dissolve the emetin. This being obtained by evaporation from the alcohol, should be re-dissolved in a diluted acid, and treated with purified animal carbon. After this operation, designed to whiten it, it is precipitated by a salifiable base.

The water in which the magnesian precipitate was washed, retains some emetin, which can be procured by another series of operations.

Pure emetin is white, pulverulent, unalterable by exposure to air, while the coloured emetin is deliquescent, very soluble in ether and alcohol, and but little so in water. Its taste is slightly bitter, reddened tournesol is restored by it to a blue colour, the acids dissolve it without having their acidity entirely destroyed, and the acid combinations thus formed, are evidently crystallizable—which makes emetin in this respect resemble veratrin. From these combinations emetin is precipitated by the nutgall, as the alkalies of the Peruvian bark.

Action of Pure Emetin on Man and Animals.

The action of pure emetin differs from that of the coloured only in being much more energetic. Two grains are quite sufficient to destroy a large sized dog. I have seen vomiting produced, by one sixteenth of a grain, in a man of eighty-five years of age, who, it is true, vomited generally with extreme facility.

I have for some time made use of a pill composed as follows:

R Sugar, ℥ iv.

Pure emetin, gr. viii. to be made into pills of nine grains.

To produce vomiting, one grain of the pure emetin, dissolved in a little acetic or sulphuric acid, may be administered in water.

The following formula may be employed:

R Infusion of linden flowers, ℥ iii.

Pure emetin dissolved in sufficiency of nitric acid, gr. i.

Syrup of marsh mallow, ℥ i.

A spoonful at a dose should be given every quarter of an hour until vomiting is produced.

A syrup may be made after the following manner:

R Simple syrup, ℥ i.

Pure emetin, gr. iv.

V. ALKALINE EXTRACTS OF PERUVIAN BARKS.

Messrs. Laubert, Streuss, of Moscow, and Gomez of Lisbon, published some years ago, and almost at the same period, their very interesting researches on the Peruvian barks. They were not agreed, however, as to the particular ingredient in which the febrifuge property exclusively resides. Messrs. Pelletier and Caventou, induced by their own researches to believe there actually did exist a peculiar substance endowed with this quality, employed themselves in the same investigation—and, following what had so happily guided them to the discovery of strychnine, emetin, &c. succeeded in obtaining a substance, which they recognized as the same described by Mr. Gomez, under the name of cinchonin—but in which Messrs. Pelletier and Caventou demonstrated also the *alcalenité*, a property very important and altogether unknown to the Lisbon chemist.

It was in their researches on the grey bark, (*cinchona cordaminea*) that they obtained the cinchonine.* The

* It was judged expedient to change the termination from cinchonin, to have it in accordance with the other alkaline vegetable medicines.

yellow bark (*cinchona cordifolia*,) afforded an alkali, which resembled the former except in a few points, which has been called by them quinine.

The analysis of the red bark (*cinchona oblongifolia*,) was made after that of the yellow bark. It became a subject of interest to ascertain if this species, considered by many as eminently febrifuge, contained the cinchonine or the quinine. The investigation showed it to possess the cinchonine, resembling entirely that obtained from the grey bark, in three times the quantity—also, the quinine, as in the yellow bark, in almost double the quantity, from which it differs only, in being more fusible, and in the appearance of the sulphate.

Preparation of Cinchonine and Quinine.

The bark is deprived of its bitter property by means of boiling alcohol. The solution is distilled to dryness in a water bath—and the alcoholic extract is dissolved in mass, in boiling water strongly saturated with hydrochloric acid.

Calcined magnesia is added in quantity sufficient to abstract the colouring matter, and render the liquor clear—which is effected after some moments of ebullition. After being left to cool, it is thrown upon a filter—and the magnesian precipitate is washed in cold water, dried by a stove heat, and then treated repeatedly with boiling alcohol, to take up all the bitter principle. The alcoholic solutions are then mixed together, and while cooling, form the crystals of cinchonine.

The cinchonine thus obtained, is combined with a green fatty matter, which it abandons when dissolved in a very diluted acid. If the acid be too concentrated, a part only of the fatty matter will be dissolved.

The quinine is obtained from the yellow bark in the same manner as the cinchonine is obtained from the grey bark.

Chemical Properties of Cinchonine.

Cinchonine is white, transparent, crystallizable in the form of needles, and soluble in seven hundred parts of cold water, whence arises its little sapidity. Dissolved in alcohol, or which is better, in an acid, it gives that strongly

bitter taste which belongs to the yellow bark itself. It is soluble, but in very small quantity, in the fixed and volatile oils, and sulphuric ether. It unites with the acids and forms salts more or less soluble.

The sulphate and acetate of cinchonine are both used in medicine. The first of these salts is very soluble in water, the other is much less so, except when previously united with an excess of acid.

Chemical Properties of Quinine.

Quinine is white, uncrystallizable, of a much more bitter taste than cinchonine, little soluble in water, but in ether it is very much so. This last circumstance affords the means not only for distinguishing this substance from the cinchonine, but also for separating the two when found united. The salts of quinine are also much more bitter than those of cinchonine.

The sulphate is very little soluble in water, but mixed with an additional quantity of acid, the solution of it becomes easy. The acetate is remarkable for its great readiness to crystallize. At a low temperature it dissolves with difficulty, but with heat and with an excess of acid, it becomes very soluble. On cooling, it is obtained in an uncrystallizable mass.

Action upon Animals.

The alkalies above described were no sooner known, than Mr. Pelletier, one of those employed in this interesting research, sent me a quantity of them to ascertain their effects on animals. I soon perceived that they, as well as their salts, were not poisonous—and further, that they produced no remarkable immediate effects. Their properties on man in health or disease, can therefore be ascertained with perfect safety.

Action on Man in Health and in Disease.

Observations sufficiently numerous have induced me to consider these two alkalies as possessing the medicinal properties of bark—and consequently fit to be substituted in every case, and often with obvious advantage. Several

physicians, and among them Messrs. Double, Villeomé and Chomel, who have also been occupied with this subject, were conducted by their own observations to the same results.

Mode of Administration.

The preparations which have heretofore been employed, are the sulphates of quinine and cinchonine. They are given in doses of one, up to ten grains, during the twenty-four hours.

Mr. Pelletier has prepared after a formula of mine, a syrup of bark perfectly colourless and transparent. The syrup contains two grains of cinchonine or quinine in each ounce of it. I have always obtained from it the most satisfactory results. It appears to me from a few months' experience with it, that its happiest effects are displayed in the scrofulous complaints of children.

Syrup of Quinine.

R Simple syrup, ℥ i.

Sulp. of quinine, gr. xxiv.

The syrup of cinchonine may be made with the same proportions.

Wine of Quinine.

R Best Madeira wine, ℥ i.

Sulp. of quinine, gr. xii.

Alcohol of Quinine.

Sulphate of quinine, gr. vi.

Alcohol, at 34° $\frac{3}{4}$ i.

The sulphate is preferred to the acetate in this formula, because the tincture made with the alkaline salt is precipitated by aqueous additions. The wine of quinine is extemporaneously made with the above formula, by mixing two ounces of it with a pint of the wine.

(To be continued.)

ART. V. *Remarks on a Disease resembling Syphilis.* By MOSES
QUARLES, M. D. of South Carolina.

BEFORE the first appearance of syphilis in Europe, several diseases resembling it prevailed. Celsus states, that there was a considerable number of affections of the genital organs in his time, and it is quite probable that some of them were propagated by coition. Astruc also cites authorities, which go to prove that there existed, in the thirteenth and fourteenth centuries, not a few diseases, communicable by sexual intercourse, and describes their symptoms, which were very diversified.

When syphilis first occurred, it was acknowledged on all hands to be a new disease. This conclusion was adopted, independently of the peculiarity of symptoms, by the consideration that the remedies with which the former diseases had been so successfully treated, were found to be of no avail. It pursued its own course, inflicting death on nearly every one who chanced to become infected. The consternation excited in many parts of Europe was indeed so great, that those labouring under the disease, were prohibited from having intercourse with the rest of mankind—were banished from their homes to places set apart for their reception, and suffered to linger out the remaining part of their existence, without hope of relief, either from medicine or nature. Happily, however, for mankind, a specific was soon discovered, which, when timely and properly administered, rarely fails to put a speedy stop to the disease. But in a few years, all the affections of the genital organs were confounded together, and subjected to the same treatment, which very much diminished the usefulness of the medicine—and it is only of late that the attention of the profession has been directed to the subject. It is to Hunter, Abernethy, Carmichael, Adams, and Thompson, of Europe, with Professor Chapman, of our own country, that the gratitude of the world is due for the revolution which has taken place on this important subject.

It is to be hoped that the time is not far distant, when those diseases will be accurately understood, and their appropriate treatment pointed out. Until this is done, we shall often have the mortification of seeing our remedies totally unavailing, and our patients' constitutions irreparably injured by mercury—which, from my own experience, as well as the authority of several respectable writers, appears to have a very dubious influence over the syphiloid complaints.

The disease now under consideration, has been observed in South Carolina and Georgia, and is vulgarly termed the dry clap or pox, either from the sparing discharge from the urethra, throughout the complaint, or from the furfuraceous scales which uniformly peel off previous to its appearing on the skin in the form of an eruption.

As this disease, so far as I know, has not been noticed by any author, I shall point out its symptoms as minutely as possible.

Four cases have come under my own observation, and others have been communicated to me by practitioners, on whose veracity and judgment I implicitly rely. I am fully of opinion, that this disease is entirely different from common gonorrhœa or chancre, and one which claims our most serious attention, as it does not yield to any remedies hitherto proposed.

It generally makes its appearance in a few hours after coition, in which respect it differs from either of these affections, with a stinging sensation about the orifice of the urethra and glans penis. This sensation at first does not amount to pain—but gradually increases for four or five days. At the end of this time, on arising from bed in the morning, the patient discovers a purulent matter on the orifice of the urethra—as well as a secretion of a similar matter from the glans penis, which part is excessively red from the commencement of the disease. The patient now begins to feel pains extending along the course of the urethra, accompanied with such a degree of restlessness, that he cannot place himself in any posture with ease. This pain does

not increase so rapidly as that of common gonorrhœa—neither is the discharge of urine attended with ardor—nor is the patient after becoming warm in bed, troubled with chordee. In short, the acute symptoms of that complaint are wanting. What disproves still more the identity of the two complaints, is this new affection refusing to yield to the remedies usually employed in gonorrhœa virulenta, and terminating in a constitutional disease, which is not less unmanageable than the primary one. In about ten weeks, shooting pains commence, which in a week or two more, become fixed and excruciating: the cuticle peels off from different parts of the body, particularly from the legs, thighs, arms and breast, which in a short time is succeeded by pustular and papular eruptions, at first sparse, but gradually becoming dense and crowded. These continue four or five weeks, then disappear, and are succeeded by others, alternating in this manner for an indefinite number of times.

In all the cases which I have seen, at an advanced stage, there was a throbbing or contraction of the diaphragm and abdominal muscles. There were also pains in the large joints, which were so troublesome during night, as to disturb, or entirely prevent sleep. There was, likewise, inflammation of the eyes, which was rather of a chronic character.

Mr. Carmichael supposes, that common gonorrhœa is caused by a virus, which, under certain circumstances, may produce sores on the penis, but differing from syphilitic chancre by their being without induration or elevated edges—and that it is capable of giving rise to a constitutional disease, which differs from syphilis by the eruptions which follow, being pustular instead of papular, and disappearing without the use of mercury. He thinks that mercury here, instead of effecting a cure, will frequently aggravate the complaint.

I readily concur with that distinguished writer, in supposing that syphilis differs specifically from gonorrhœa virulenta, but must confess that I cannot acquiesce with him in

the opinion, that the latter will produce eruptions. I believe that the observation of practitioners will go to disprove this—and when constitutional symptoms arise, such as sore throat, eruptions, &c. after a gonorrhœa, we may justly conclude that the patient has been affected with chancre some time previous, or that the discharge is not the effect of common gonorrhœa, but some other disease specifically different.

I can easily conceive the possibility of confounding gonorrhœa virulenta with the disease under consideration, as there is not any great discrepancy of symptoms—but cannot well imagine how syphilis can be confounded with it either in its primary or secondary form, as they differ as widely as any other two diseases, from beginning to end.

In this disease, instead of a chancre, there is a discharge from the urethra and glans penis—there are no buboes—the eruption disappears without the use of mercury, and returns at uncertain intervals, and for an indefinite number of times—neither is there ulceration of throat, nor nodes, nor caries of the bones: and the pains, instead of following the course of the long bones, are confined to the large joints.

Although syphilis has so many deplorable symptoms, which never fail to occur when suffered to run ad libitum, yet owing to our being in possession of a specific for this malady, it is far less to be dreaded than the disease before us, whose slow approaches and mild appearances, would lead one, not acquainted with the disease, to suppose otherwise. These appearances, when I come to treat of the particular cases, will, however, be shown to be fallacious, and not to be depended on. And until we discover some remedy which has as certain influence in curing this complaint as mercury has in syphilis, it is to be much dreaded—although in most cases, I am persuaded, it will cease spontaneously—but not until it debilitates the constitution, and brings the patient into that dilemma to which death is scarcely less preferable.

CASE I.

William H****, aged twenty-three, of a good constitution, came under my observation on the 21st December, 1819. He stated, that five days previously, he had intercourse with a suspicious woman, and two hours after felt a stinging sensation about the orifice of the urethra and glans penis, which in a short time became very red—and on arising from bed the morning before I saw him, he discovered a gleety matter on the orifice of the urethra, as well as a secretion of a similar matter from the glans penis. On examination I could not detect any discharge from the urethra—but the glans penis was somewhat inflamed, and covered with a purulent matter. He was now ordered to wash the glans penis with a solution of the acetate of lead, and to inject up the urethra a solution of the same—to purge every third day with the sulphate of soda, and use a spare diet. This plan of treatment was continued until the 19th of March, without any perceptible advantage. He was now ordered to wash and inject with a solution of the acetate of zinc, and to take thirty drops of the balsam copaiva three times a day. He used these remedies until the 10th of April, without correcting the discharge. The pains extending along the urethra, which, from the fifth or sixth day of the disease had been considerable, were now severe. The patient at this time called my attention to bran-like scales, which were peeling off from different parts of the body, particularly from the legs, thighs, and breast, which lodged among the hair on those parts in considerable quantities. He said that they had appeared about a week previously. They were not now, however, supposed to be connected with his disease. He was directed to use a weak solution of corrosive sublimate as a wash and injection, to purge occasionally with the sulphate of soda, and to discontinue the balsam, as it disagreed with his stomach. On the 22d of April, eruptions had begun to appear on those parts, from which the scales had peeled off most abundantly, which induced me to conclude that they were produced by the disease. In this opinion I am now confirmed, as they were

present in all the cases I have since seen, and which proves them not to be accidental. There were also at this time shooting pains extending from the *regio pubis* to the umbilicus, accompanied with a burning sensation in the bowels, and a contraction of the diaphragm and abdominal muscles, and also considerable acceleration of the pulse. He was now bled to sixteen ounces, and considerably relieved. It was likewise thought advisable to use mercury in some shape, and accordingly calomel was directed in doses of a grain, night and morning. In six or seven days he was brought under a gentle salivation, which was kept up until the 28th of June, without any evident amendment—the eruptions having disappeared and re-appeared twice during its use. The calomel being discontinued, the nitric acid was resorted to in the quantity of a drachm a day. He was likewise directed to use a solution of the sulphate of copper, as a wash and injection, instead of the one of corrosive sublimate. This treatment was kept up until the 16th of August, without either removing the eruptions or correcting the discharge: the former being more numerous than they had been during the disease: the latter being somewhat moderated from the glans—but continuing the same from the urethra—especially in the morning, immediately after getting out of bed. The patient was now troubled with severe pains in the abdomen, with an increased sense of burning: the diaphragm and abdominal muscles still continuing to contract violently, and the pains in the joints having become excruciating. All of which subjected him to considerable fever, for which he was again bled to sixteen ounces, with some alleviation of the symptoms.

All kind of medicine was now omitted for a fortnight, and diet prescribed. The patient, however, became dissatisfied, and was solicitous of trying mercury again. It was consented to—but instead of the calomel, the corrosive sublimate was given, in doses of the sixth of a grain twice a day, in conjunction with the decoction of sarsaparilla—which course was pursued until the 17th of October, with no better effect than the former remedies.

From its success in some of the eruptive diseases, the white oxide of arsenic was now given in doses of the eighth of a grain twice a day, instead of the corrosive sublimate—the decoction of sarsaparilla being still continued. This manner of managing the complaint, at the end of two months, was found also wholly inefficient. All remedies were now left off, and a generous diet and exercise, as far as his strength would permit, were prescribed. In seven or eight months, the discharge from the urethra and glans penis, had ceased: the inflammation and pains in the bowels, as well as those in the joints had considerably abated, and the eruptions at every re-appearance, considerably diminished in number, indicating, most manifestly, that the disease was on the decline. Accordingly in ten or twelve months after the remedies had been left off, and about twenty months after the commencement of the disease, the symptoms disappeared, leaving his constitution much impaired.

CASES II. & III.

John * * * * and wife, both of good constitutions, came under my observation, on the 25th June, 1819. They stated that they had been diseased ten or twelve weeks, that the disease had come on, in him, in two days after being exposed to infection, with a redness of the glans penis, accompanied with a disagreeable sensation about the perineum and anus. On the fourth day, in the morning, on getting out of bed, he discovered matter on the orifice of the urethra—and in three days afterwards, he detected a secretion of matter from the glans penis—there being at this time, considerable pain and uneasiness about the genital organs.

In his wife it made its appearance in three days after it had commenced in him, with a burning and restless sensation about the parts of generation, perineum and anus—but no discharge took place from the vagina—nor was there any, while she was under my inspection, which was about eight months—although there was more or less inflammation and pain of the parts during this time. They stated

that they had commenced by living low and using an injection and wash of the acetate of lead, immediately on finding they were diseased—which they continued until a few days previous to my seeing them, without checking their complaint.

On examination I found his glans penis covered with a purulent matter, and considerably inflamed, but no abrasion could be perceived on any part of it: there could not at this time be discovered any discharge from the urethra, it being late in the day—but he assured me that it could generally be seen in the morning, immediately after arising from bed, before urinating, which I afterwards found to be the fact. He stated, that for four weeks previous, he had at times severe pains in his testicles and along the course of the urethra, which subjected him to such a degree of restlessness that he had no ease in any posture—and about two weeks before, shooting pains commenced in the abdomen, which had now become fixed, and attended with a great degree of heat, and violent contraction of the diaphragm and abdominal muscles, which gave to the hand, when placed about the umbilicus, a pulsatory feel. He also had considerable fever, with distress about the præcordia and difficulty of breathing.

Upon a further examination, I found, that a desquamation of the cuticle, in a similar manner and from the same parts, had taken place as in the first case. His wife, at this time, had much uneasiness about the genital organs, pain and heat in the bowels, throbbing about the umbilicus, uneasiness about the præcordia, and difficulty of breathing with an acceleration of pulse.

These two cases being so exactly the same, in almost every respect, and so similar to the first case, which had resisted the usual treatment, it was difficult to fix upon any plan of cure, which would afford any probability of success. But owing to our not having remedies, in which we could place more confidence, the same course was resolved upon, more for the purpose of setting completely at rest, a question, which was already pretty well confirmed in my mind,

than for any benefit that was expected to be derived from it. It was supposed in case of failure, in both of these cases, the only just conclusion which could be drawn, would be, that these three cases arose from a virus specifically different from that of common gonorrhœa or syphilis, and required a different treatment. Accordingly they were both bled to sixteen ounces, and ordered an injection and wash of the acetate of zinc, to live low, and avoid exercise, and likewise to purge occasionally with the sulphate of soda. They continued this treatment until the 19th of August, when their arms, breast, nates and legs, were covered with pustular and papular eruptions, which they said had commenced breaking out a few days before. They were now ordered calomel, in doses of a grain twice a day, and in six or seven days a gentle ptyalism was induced, which with the injection of the acetate of zinc, was kept up until the 14th of November, without amendment—the eruptions having disappeared in both, and reappeared in increased numbers. The pain, heat, and throbbing in their bowels, still continued, with some degree of fever, and difficulty of breathing at times. He experienced repeated paroxysms of violent pain in his testicles, and rectum, extending up the urethra. The discharge from the glans penis had become more attenuated—but continued, as to quantity, pretty much the same—that from the urethra continued in the same sparing manner as at first.

Her local symptoms, although the constitutional ones were much the same as his, were infinitely milder. She however, at her menstrual periods, experienced an aggravation of the pain, heat, &c. about the parts, and at her two last periods, an entire suppression of the menses.

They were directed to discontinue the calomel, as well as the injection of zinc, and to take freely of the decoction of sarsaparilla, and also to use a solution of corrosive sublimate and opium, as a wash and injection. This mode of treatment was persevered in for three months, without doing more than the former remedies—the eruptions having disappeared and reappeared twice during its continuance,

and at this time there being a large crop on both of them, and particularly on him.

On the 21st of February, 1821, they were advised to discontinue all remedies and use a nourishing diet, to which they acceded for four or five weeks—but finding their disease not to subside, they employed a physician of Augusta, (Ga.) with whom they in a short time became dissatisfied, and resorted to another, who succeeded no better. They finally had recourse to various popular remedies, without relief—and after labouring under the complaint for upwards of two years, moved to the state of Alabama, and the result is unknown.

The fourth case occurred in a gentleman whom I saw but twice, and I shall therefore merely observe, that from what I could learn from him and his physician, it was the same disease with which the three others were affected, and in the same manner refused to yield to the usual treatment. He had been salivated repeatedly, and taken various other remedies with no effect, and when I saw him last, the disease still continued, although he had been affected upwards of two years.

ART. VI. *Experiments and Reflections on the cause of the Vacuity of the Arteries after Death.* By WILLIAM FENNEL, M. D. of Virginia.

TO this subject, my attention has been directed, by the perusal of a paper on it by a distinguished writer of England. My allusion is to Dr. Carson, who has recently advanced an hypothesis, supported by a series of experiments, which seems now to be very generally received, as affording the most satisfactory solution of the problem under examination. In these experiments he employed a variety of animals—but there is so little difference in the results, that a general notice of some few of the most striking of them will suffice.

1st. He made two incisions of an inch in length, between two ribs, on each side of an animal, which communicated

with the cavity of the chest. This produced a collapse of the lungs in a few minutes, which was followed, as a necessary consequence, by death. On dissection, the following phenomena, we are told, were exhibited: "The muscles were remarkably red—and when an incision was made in them, they poured out blood. The membranous parts exhibited the blood-vessels as if they had been fully and nicely injected—forming an anastomosis, which appeared like a netting made of red threads. I was," says he, "particularly struck with the coats of the intestines, instead of exhibiting the usual pale, smooth surface, without the vestige almost of a single blood-vessel, they appeared to be composed of a red coloured netting, the meshes of which varied greatly, both in dimension and in form. The liver was like red morocco. The flesh of the rabbit, which is usually white, was in this case of a reddish colour, and all the dissected parts became wet with effused blood. The heart contained little blood. When the chest was opened, and the large vessels it contained were divided, a small quantity of blood only was effused—not much more, indeed, than from the other parts of the body. The aorta and large arteries, in all the instances, were pale externally, while the accompanying veins were of a blue colour. A part of the ascending aorta, above the bifurcation of the iliacs, after its extremities had been secured by ligatures, was cut out, and was found to contain a small cylinder of blood, generally coagulated. The heart and vessels about it contained only a moderate quantity of blood, for scarcely any blood was found after the division of the vessels to have been effused in the shell of the chest."

"Next," says he, "I killed animals by thrusting a sharp instrument between the vertebræ of the neck. They died instantly, and were immediately opened. Hardly was the vestige of a blood-vessel to be observed on the surface of the intestines or stomach, both of which had a pale appearance, excepting where they were tinged by the colour of their contents. The membranes scarcely exhibited any traces of vascularity. The flesh was white, and when cut into appeared to be dry, discharging at some parts a drop or two

of blood. The liver was of a dusky brown colour. The trunks of the veins were swollen and rounded—whereas in the other rabbits they appear flat, and to contain a thin layer of blood. A considerable quantity of blood was found in the shell of the chest, after it had been opened, and the large vessels it contained had been divided.”

“The result of these experiments,” continues our author, “I think fully warrants the conclusion, *that the difference of the distribution of the blood after death, from that in which it must have existed in the living system, arises chiefly from the elastic power of the lungs, and that the emptiness of the arteries and of the smaller vessels observed after death, admits of a satisfactory explanation, from the supposed operation of this cause, combined with that of the elasticity of the arterial canals.*”

Entertaining from the first some distrust of the accuracy of these experiments, as well as of the conclusion drawn from them, I resolved to repeat them, so as to afford myself the best evidence on the subject. In August, 1821, I accordingly commenced the undertaking, and in the presence of Dr. Lawrance of Philadelphia, whose reputation for skill in researches of this kind is so well established, made the following experiments.

Exactly after the manner of Dr. Carson, I took a half grown rabbit and made two incisions, one on each side, between the fifth and sixth ribs, an inch in length. In six minutes the animal expired from a collapse of its lungs—and as soon as it ceased to breathe its body was opened, which gave the following appearances. The heart still continued to act, though very imperfectly. The arteries could be seen to diminish, while the veins, more particularly the large veins, were enlarged. When the left auricle and ventricle were opened they contained very little blood: I placed two ligatures around the aorta, one at its great bifurcation, the other a few inches above it, and cut out the enclosed part: on examination, it was found to contain a small quantity of blood. The cutaneous arteries and veins could be seen very beautifully anastomosing—when I first separated the integuments

from the body, which in these animals is very easily accomplished, even without the aid of a scalpel—in the space of five minutes the arteries were empty, and the veins, though not so much dilated as they were at first, contained blood enough to make them round.

On cutting into the muscles no blood exuded, as is asserted by Dr. Carson, nor were the muscles more red, than in the animals killed by cutting the spinal marrow. The membranous parts exhibited the blood-vessels very much like the skin, and in a few minutes their arteries contained no blood: their veins were round, but not as large as when I first opened the body of the animal. The intestines gave nearly similar appearances, and after the cessation of action in the arteries they showed the same phenomena as did the membranes and cutaneous parts. The liver was of a reddish brown colour. On opening the right side of the heart and pulmonary artery with the *venæ cavæ*, there was an inundation of blood, partly coagulated: the pulmonary veins were quite empty—and the lungs of a light red colour.

After a repetition of these experiments sufficiently often to satisfy us that in every instance, the same phenomena would take place—I cut the spinal marrow of other animals, near the superior cervical vertebræ, which produced death in seven minutes. I opened the bodies as in my first experiments, and found in every instance the same appearances, except in the pulmonary veins, which contained a small cylinder of partly coagulated blood—and the lungs which were larger and of a deeper colour, than in the former experiments, owing to the greater quantity of blood they contained.

Having repeated these experiments sufficiently often to convince all present* of their accuracy—I killed several animals by collapse of the lungs—also some by cutting the spinal marrow as before—and suffered them to lie several hours, before I opened them: on examination no difference could be found, as respects the state of the arteries.

Let us next see how far Dr. Carson's reasoning from his

* There were present several of my medical friends.

experiments, even admitting them to be correct, will hold good. He very justly assigns two powers of motion to the animal machine—one its elasticity, the other its irritability.

Elasticity appears to be a property given to parts, and only acts in subservience to the irritability: for instance, in an artery we have three states or capacities produced by three different causes, more particularly in the larger arteries. First, its dilated state—secondly, we have a contracted or diminished state—thirdly, its middle or pervious state. The first is dependent on the vis a tergo of the blood, derived from the systole of the heart—the second is dependent upon the contraction of the coats of the artery itself, produced by the stimulus of the blood on its coats, and also from the stimulus of distention—the third is produced by the elasticity of the artery, and is independent of life.

That the circulation may go on regularly, it is necessary that there should be some property inherent in the arteries, to keep them in that state which will favour the passage of the blood through them. No property could be better calculated to perform this office than elasticity, which confers on each artery a tendency to remain pervious—or, in other words, keeps it open, that there may be as little retardment in the passage of the blood from the heart to the different parts of the body as possible.

As soon as the life or irritability of an artery is lost, its contractions cease—the elasticity becomes inactive, in as much as it has no power to withstand, and it necessarily must on this account rest in the middle state, or that state which shows the natural size of the part in possession of this property.

The experiments of Dr. Carson led him to conclude, that the vacuity of the arteries after death, was in part dependent on their elasticity. But I cannot perceive any thing in them, or of his reasoning, calculated to warrant such an inference.

When the blood is thrown from the heart by its systole, it is received by the arteries. These tubes are dilated and stimulated to contract upon the blood they contain, and throw it in the next order of arteries. These again are made to

go through the same routine of contractions, and so on, until the blood reaches the veins, where it soon gets from under the influence of the heart and arteries, being here dependent chiefly upon the action of the veins themselves for its passage to the heart again.

Now the chief office, as before observed, of the elasticity, appears to be that of keeping the arteries open, that they may receive the next gush of blood from the heart with as little impediment to its entrance as possible. I do not conceive that the elasticity of an artery can have the least influence in imparting velocity to the blood. It seems, indeed, to have an opposite effect, as the blood must overcome this power before the artery is dilated—and this power remaining the same, cannot throw the blood on with a greater force than was offered by the *vis a tergo* to overcome it. To the celebrated Whitt's experiments and reasoning on this subject, I refer for the establishing of this fact.

Taking it for granted that our author's speculations on this point, must fall to the ground, I proceed to inquire how far the second cause assigned by him of this phenomenon, is maintainable. He alleges, that in the lungs there is a tendency to form a vacuum, owing to the elasticity or resilience of these organs, which he supposes has the effect of draining from the different parts of the body the blood, until this vacuum is filled—on which account it is the arteries are found empty after death, there not being blood enough to fill both arteries and veins.

My experiments, I think, satisfactorily prove, that the venous system has capacity sufficient to hold all the blood in the body, independently of the vacuum formed by the lungs, as he affirms. On dissecting the animals killed by collapse of the lungs, I could not perceive the least difference in the whole circulation, except, as I have previously stated, that the lungs and pulmonary veins were of a lighter colour, and contained no blood—whereas in the other animals there was a smearing of blood, in these veins—the lungs being larger and of a deeper red colour.

It is said by our author, that in animals killed by butchers, very different appearances are observable from those destroyed by collapse of the lungs. It appears that in this instance he was quite forgetful of the manner in which they are killed for market. Being desirous to make the flesh look neat and white, butchers bleed them gradually to death—which undoubtedly, will make the appearances different from those in an animal killed by collapse of the lungs, as in this process, not a drachm of blood is lost. Let an animal be killed by collapse of the lungs, and one by cutting the spinal marrow, and I will defy any one to discriminate between the flesh in the two cases.

Having demonstrated that the appearances *post mortem* of animals killed by collapse of the lungs are the same as those exhibited by animals killed by cutting the spinal marrow, it follows, I think, that there cannot be any tendency in the lungs to form a vacuum, or, if a vacuum be formed, it does not as our author suggests, drain the blood from the different parts of the body.

In reviewing my own experiments, I am led to draw from them an explanation of the problem before us, which I shall now with great diffidence submit.

That respiration ceases previously to the entire cessation of the action of the heart and arteries, in animals which are killed or die a natural death, is a fact that every one must acknowledge. This being the case, when respiration ceases, the lungs become flaccid, and thus occasion a partial obstruction in the weakened circulation. But the heart and arteries continuing to act sufficiently to empty themselves of the blood imposed upon them, forcing it into the veins, which tubes being less powerful than the arteries, and having the obstruction in the lungs to oppose the passage of blood from the right to the left side of the heart, they unavoidably become the part of the circulatory system, which must contain the great mass of the blood after death.

That the partial obstruction in the lungs, and the contraction of the heart and arteries, are the cause of the vacuity of the arteries is proved, as well by my own experi-



ments, as by the appearances on dissection of animals killed by lightning.* The life of the animal here being destroyed in an instant, the arteries not having the power to contract, cannot throw the blood from their cavities, into the veins—on which account, the blood of animals thus destroyed is always found in the arteries and veins, in a just proportion, though the elasticity in every part be the same as before death.†

ART. VII. *An Essay on Uterine Hemorrhage.* By WILLIAM P. DEWEES, M. D. Continued from No. 8.

WE now come to the more important part of our subject, namely, the mode of treatment. In pursuing our inquiry into this, we shall endeavour to be as explicit as the nature of the subject will admit; for we can but establish general principles, and modes of management, as every individual case will present a shade of difference; and the treatment of this shade of difference, whether important or otherwise, must be very much left to the good sense and judgment of the practitioner. We, however, trust at the same time, that little embarrassment will be experienced, as the indications, and their fulfilment will be so decidedly pointed out, as to render the one pretty certain, and the other without much ambiguity.

With a view to perspicuity, we shall divide the disease we are considering into periods, and the remedies into their

* An account of the dissection of three horses killed by lightning. *Medico Chirurgical Review*, vol. 3.

† This essay was written nearly a year ago. I have since repeated my experiments on different animals, and find the results of the former fully confirmed.

nature or supposed mode of action. We shall also consider the peculiarities of each period, and by this means more clearly and certainly establish the mode of treatment; and at the same time, we shall give a sufficiently full consideration of each particular remedy—the period at which it is more especially indicated; its mode of action, and the degree of confidence to be placed in it. By this method we hope to avoid the confusion that must necessarily arise from a more general consideration of our subject, as well as ascertain the positive and relative efficacy of the whole class of remedial agents.

In the division of this part of our subject, we shall nearly follow Dr. Denman's arrangement, as it embraces every essential variety of period at which hemorrhage may be the consequence of utero-gestation, and may be considered under four heads: and 1st, That period of its occurrence in which the ovum is entirely surrounded by the decidua and decidua reflexa, which will comprehend the first four, or four and a half months of pregnancy. 2d, Into all the remaining period of utero-gestation. 3d, Into the period between the birth of the child and the expulsion of the placenta. 4th, Into that which may follow the expulsion of the placenta.

This division is by no means an arbitrary one, it is founded upon principles and circumstances, that must not carelessly be lost sight of, if we wish either to understand the nature of the disease in question, or become acquainted with its most successful mode of treatment. For instance, until after the time pointed out in our first division, it would be highly improper under almost any circumstance to pierce the ovum with a view to the discharge of the liquor amnii, yet at the second period it may become an essential remedy. In the third, the woman's safety may depend upon the immediate delivery of the placenta, and the subsequent contraction of the uterus; while in the fourth, her life may be hazarded by having hastily withdrawn this important mass, when contraction was not present.

First Period.

Until the period of four and a half months or even to the fifth, the ovum, when separated entire from the uterus, appears to be an ovular, spongy, fleshy mass ; it bears evidence of attachment to the parietes of the uterus, in every point of its surface—and it would seem to show, that at any one part of this, it may be subject to separation, and the effect necessarily be, a solution of continuity of more or less vessels, and a consequent hemorrhage. We have just intimated that this separation may be at any point of the ovum, but the effects will be in some measure different, as it may happen near the neck, or at the body, or fundus of the uterus. When the separation happens at the body or fundus of the uterus, before the blood can issue from the os tincæ, it must necessarily loosen the attachment between the spot of commencement, to the point at which the blood issues ; it will therefore follow, that when this takes place, the chance of arresting a flooding, and preserving the ovum, must be diminished in proportion to the destruction of the connecting medium. But when the disunion takes place near the neck, the mischief will be less serious, though the discharge may be very abundant—that these two different conditions happen, there can be no doubt ; but the diagnoses are far from being established ; indeed, we do not know that this distinction has ever been adverted to, or the marks which may distinguish each, ever been attempted ; nor is it perhaps of much practical importance that they should, since they do not require a difference of treatment.

We can, however, discover most probably the cause, why an hemorrhage of great pertinacy and extent shall not be followed by abortion, while one of much less threatening aspect shall eventuate in it. It is a fact, notorious to every practitioner of experience, that, when hemorrhage is accompanied by pain, the chance of preserving the ovum is diminished almost in proportion to its intensity ; while a flooding, which is not attended with it, constantly presents a hope that it may escape destruction, however profuse almost

the discharge may be. Now, when a considerable separation takes place, as must be the case when it commences, at the upper parts of the uterus, pain will more likely occur, than when it happens near the neck—hence, we sometimes have pain before the blood issues externally ;* the uterus in this instance suffers irritation from partial distention by the blood insinuating itself behind the ovum ; contraction ensues, and the blood is forced downward, and is thus made to separate the attachment between the ovum and uterus in its course, until it finally gains an outlet at the os tincæ.

In consequence of the uterus being excited to contraction, the friendly coagula which may form from time to time are driven away, and the bleeding each time is renewed, and accompanied, most probably, with an increased separation of the ovum, until at last, from its extent, the ovum becomes almost an extraneous body, and is finally cast off. Now, the contrary of all this obtains (at least for some time) where the point of separation is near the neck of the uterus, since much less destruction can happen, even though attended by pain, owing to the proximity of the denuded surface to the place of escape. The blood, instead of forming coagula above the point of separation, so as to irritate the uterus by distention, and increase the lesion, will find immediate issue through the neck of the uterus ; and thus is removed a powerful and mischievous agent.

It must, then, clearly follow, that there are many cases of severe flooding, in which the ovum may be preserved, owing, in some instances, perhaps, to the part first separated by the action of the remote causes, and in others to the extent of lesion not being considerable. Now, as we have no unequivocal mark by which the one case shall be distinguished from the other, it becomes a duty in the manage-

* Does this not seem to prove the separation to be remote from the os uteri, and serve to distinguish these two cases, especially in the commencement of hemorrhage ? Dr. Bard says that “when labour pains precede the discharge, miscarriage can seldom be prevented ; when they follow, they sometimes may.” *Midwifery*, p. 138.

ment of all such cases, so to act, as if the ovum could be preserved*—we have, ourselves, constantly acted upon this principle; and we have sufficient reason to believe we have been rewarded in a number of instances by success, when the hope was truly a forlorn one.

It might sometimes lead to happy results, could we certainly determine, *à priori*, where our endeavours would be followed by success, and where they would not—much time might sometimes be saved, and much anxiety be avoided; but as this, with our present knowledge, can be ascertained but in few instances, it will be constantly erring on the right side, to suppose, that the ovum may be preserved. As far as our experience goes, we must say, we have never been able to determine, with certainty, in the commencement, the cases that would eventuate in safety to the ovum, from those where it would be expelled. This has not been owing, we believe, to inattention to the subject; for we can truly say, much pains has been bestowed upon it; but is dependent upon the influence of a variety of causes, some of which are so occult as to elude our keenest search, and to others so little under control, as to render opposition entirely unavailing. We are told by some, that if the orifice of the uterus be open, and clots freely pass, we may be sure the woman will miscarry.† ‡

* Mauriceau gives an instance, where the ovum was preserved, though there were frequent returns of hemorrhage, until the third month. Ob. 60. Another, where there was almost a continual discharge for five weeks, and that, at times, very abundant. Obs. 678. To these we might add several instances of like kind in our own practice. Puzos declares that pain and flooding do not always produce abortion. *Mem. de l'Academ.* tom. i. p. 211. Kok declares women have gone their full time after severe hemorrhages. See Pasta, p. 215. Dr. Bard says, "a discharge of blood from the womb, though a very frequent, and generally the most important symptom, is not necessarily followed by miscarriage." *Midwifery*, p. 138.

† Mauriceau, &c.

‡ Pasta declares this not to be strictly true; he says there are instances of women going their full time, after severe flooding in the early months, where the uterus was sufficiently open to allow the finger to pass, and others, where abortion has ensued, though the os tincæ was for a long time closed. *Pasta Traité des Pertes de Sang.* p. 28. vol. i.

It has been supposed by some, that the *os tincæ* was always soon affected in cases of hemorrhage threatening abortion—Spigelius* declares he always found it open; but this neither accords with our own experience, nor that of many others. Mauriceau declares he could not discover it open upon the most careful examination, in many instances of flooding.† ‡ We are rather of opinion, that the uterus has been supposed to be open, because of the expulsion of clots—but this is by no means true; for the coagula are always, perhaps, but certainly much the most frequently, formed in the vagina, when an ovum occupies the cavity of the uterus. Of this, the most decisive proof can often be given, in the very early months of pregnancy, by a mere survey of the size of an expelled coagulum; many times it is five or six times the size of the uterine cavity, were this even not filled by the ovum. The conclusion then, that the uterus must be open to give passage to coagula, is not a correct one: nor is the supposition, that after having dilated to give passage to a clot, it will immediately close again, more consistent with fact.§

From this it would appear, that little information can be derived from an examination of the state of the uterus in the commencement of a flooding; for the *os tincæ* may be completely closed for a long time, in some instances, and the ovum be eventually cast off; while in others, it may be naturally a little open, without offering additional risk to the embryo. But we may safely declare, where the neck of the uterus is distended, so as to resemble in feel the extremity of an egg, and, however small the opening of the *os tincæ* may be, that there abortion will sooner or later take place. In this case the uterus is thrown into complete action, and the extension of the neck of the uterus just spoken of, is the effect of these contractions. There is an-

* Pasta, p. 38, vol. i.

† *Maladies des Femmes grosses.*

‡ Dr. Rigby declares that women have died of hemorrhage, without the uterus being much opened; but supposes in such cases it may be in a dilated state. p. 42.

§ Pasta, p. 34. vol. i.

other mark equally unequivocal, and to which we have already adverted, at page 281, No. 8, namely, the cessation of morning sickness, a diminution of the abdominal tumour, and above all, the secretion of milk, followed by flaccid breasts. In both these cases, all attempts to save the ovum, by the administration of opium, bleeding, or other remedies, would be unavailing; the whole care should be directed to the state of the flooding.

Nor is the quantity of blood expended any positive evidence that abortion will take place, especially when unaccompanied by pain—for we have repeatedly seen a very large waste of it without any other evil attending; while on the contrary, we have witnessed the expulsion of the ovum with the loss of a very few ounces, when attended by pain.* As a general rule, perhaps it may be said, that those cases of flooding following any violence, more certainly end in abortion, than those which come on silently and slowly, without any apparent cause.

We should place no reliance upon the opinion that a moderate discharge of blood from the vagina during pregnancy is useful by removing topical plethora.† On the contrary, we should look upon every appearance of this kind with great suspicion, and treat it as if it were to become decidedly mischievous. Even the legitimate returns of catamenia, when there is reason to believe that the uterus is impregnated, should be treated with caution, since we cannot satisfy ourselves at first that it is merely a monthly purgation.‡ In all such cases where we have been consulted, we have directed as if it might be a discharge of an injurious character. In this we believe ourselves to be in the right, since no evil can result from the adoption of the advice, but from a neglect of it much mischief may ensue.

* Pain accompanying flooding should not make us abate our endeavours to save the ovum, but under the circumstances just stated above.

† Kok says that local plethora is a cause of hemorrhage. See Pasta, p. 275.

‡ This is not the place to defend the opinion, of a woman menstruating after impregnation; we shall only say at present, we are abundantly convinced of the fact.

In all cases then, where there is a sanguineous discharge from the vagina of a pregnant woman, we should immediately treat it with the utmost care—all the essential indications should be instantly complied with, and no time should be lost by temporizing.

The essential indications are, 1st, to arrest the bleeding; 2d, subdue pain if present; and 3d, prevent a recurrence of the hemorrhage.

These three points are constantly to be kept in view, as the preservation of the ovum, or even of the woman, is dependent upon them. Therefore whenever a woman is seized with an hemorrhage from the uterus, the sooner we can arrest it the better; every known remedy of efficacy is to be employed in succession, should the antecedent ones fail of success; and every advantage must be given to the means by the patient and her attendants, by a strict adherence to the directions enjoined. It would be in vain for the physician to prescribe, if either the patient or attendants run counter to his instructions; and in no case perhaps is this observance of more decided consequence than in the complaint we are now considering.

One of the first steps to be taken is to command the most perfect rest of body, and of mind as far as may be practicable. The patient should be placed upon a matrass, sack-bottom, or even floor, in preference to a feather bed. The room should be well ventilated; the patient very thinly covered; her drinks of the mildest kind, such as toast water, cold baum tea, lemonade, ice water, &c.—no stimulating substance of any kind should be permitted. Care should be taken even in the administration of food and of drinks, that the patient be not subjected to exertion to receive them; they should be given to her while in an horizontal position. Her food should also be of the same character with her drinks—thin sago, tapioca, gruel or panado—in neither of these should wine or any other liquor find admission; they can be rendered agreeable by lemon juice, sugar, or nutmeg. All animal food, or the juices of them, in the commencement of flooding, should be forbidden. Let whatever is

given, be given cool. Absolute rest of every member of the body should be enjoined.

The officiousness of nurses and of friends very frequently thwart the best directed measures of the physician, by an overweening desire to make the patient "comfortable." This consists in changing of clothes, "putting the bed to rights," or altering her position; all this should be strictly forbidden. Conversation should be prohibited the patient, and all unnecessary company excluded. Much mischief is frequently done by the injudicious talk of bystanders, who delight for the most part in the marvellous, and but too often relate the histories of cases which are every way calculated to appal the already but too much alarmed patient; this kind of gossiping should be peremptorily forbidden, even at the risk of giving offence, rather than permit it to the decided injury of the sick.

Having established a proper system for the repose of the patient and the government of the attendants, we should next determine the propriety of blood letting—this becomes very often of high importance, especially at this division of our subject; plethora is an usual attendant at this time, nay, may be, as we have hinted, the very cause of the alarm. Blood should be taken from the arm in a quantity proportionate to the exigency, remembering we do little or no good by the operation if we do not decidedly diminish the force of arterial action; let the pulse rather sink under the finger than otherwise; its repetition must be regulated by circumstances, recollecting, however, that hemorrhage is sometimes maintained solely by exalted arterial action; as the following case will very clearly show.

We were called to Mrs. B. in January, 1796, who we found much exhausted by uterine hemorrhage, in the fourth month of gestation. She had several days previous to our visit, returns of flooding, but were but little attended to. The usual means were now employed, and for the time being, the discharge was arrested—this was early in the morning of the 16th. She remained very well until 5 o'clock, P. M. at which time she had another return of flooding;

we were instantly sent for, and living but a few steps from the patient, were very quickly at her bed side. She was found to be flooding very rapidly; the pulse was very active; and the eruption of blood appeared to be preceded by a slight rigor, followed by high arterial action; she was instantly bled from the arm, and the abdomen covered with ice and snow until there was a reduction in the force and frequency of the pulse; so soon as this took place, there was an abatement of the discharge; this condition was followed by slight alternate pains in the back, shooting towards the pubes. Forty-five drops of laudanum were now given, and strict injunctions were left that the patient should be kept as quiet as possible, and in case of return of the flooding, that we should be instantly apprized of it. 17th, A. M. The patient was found free from fever and almost free from discharge; in this way she continued until about 5 o'clock, P. M., when the whole scene was renewed, as mentioned before; she was again bled; subjected to the application of the ice; and the laudanum was repeated for the same reasons as yesterday. 18th, A. M. 8 o'clock, was called suddenly to my patient, as she again had a return of fever, with hemorrhage; she was again bled, &c.

In this manner did matters proceed for several days; it was found now, that the arterial exacerbations observed no regular period; but whenever they occurred there was uniformly a return of the flooding, and none but during this state of excitement; with a view to interrupt this condition, or to abridge it as much as possible, we placed a young gentleman at the patient's bed side with orders to bleed the moment he perceived an increase of pulse; this was accordingly done, and from each bleeding there was a decided advantage. The loss of five or six ounces of blood was sure to put a stop to the uterine discharge in the course of a few minutes, and sometimes would prevent its appearance when very promptly used. By proceeding in this manner until the 23d, the patient was entirely freed from this distressing complaint. She was bled seventeen times, and lost, by

computation at the time, 110 ounces of blood in the course of seven days. She gradually gathered strength, and was safely delivered at the proper time.

The acetate of lead should now be given in doses, and in frequency, proportionate to the violence of the discharge. From two to three grains guarded with opium, may be given every half hour, hour, or less frequently, as circumstances may direct: or in case the stomach be irritable, a very efficient mode of exhibiting it is per anum—twenty or thirty grains may be dissolved in a gill of water, to which will be added a drachm of laudanum: this must be repeated *pro re nata*. If pain attend, more opium should be given than if there be none; and this must be repeated until a decided impression be made upon the uterine contractions, or until its exhibition appears totally unavailing. Should the discharge be profuse, the application of equal parts of cold vinegar and spirit of any kind, may be applied to the region of the pubes; or, what is still better, a large bladder two thirds filled with ice and water.

The discharge from the vagina, when very profuse, will not always yield however to these remedies; and if it does not, it will very soon become highly alarming. To save even a few ounces of blood is a duty, and sometimes is highly important: should then the means just recommended fail in moderating or stopping the threatening symptoms, no time should be lost in employing the Tampon. The best we have ever used is a piece of fine sponge of sufficient size to fill the vagina. It should have pretty sharp vinegar squeezed from it several times with a view to cleansing of it, as also that it may be imbued with this acid; it should then be introduced into the vagina, and suffered to remain until its object is answered.

Previously, however, to the introduction of the sponge, it will be well to examine the state of the *os tincæ*: the condition we may find this in, will very much govern our decision and prognostics. Should it be found entirely closed and of its original shape, we may, notwithstanding the profuseness of the discharge, and even the presence of pain,

still entertain a rational hope of preserving the ovum ; but if on the contrary its form be altered and the mouth opened, we are pretty certain it will be sooner or later cast off. But neither of these conditions are to affect our conduct as regards the bleeding ; for this is to be staunched though we are certain the embryo will be lost. Much error is committed sometimes under the impression that the ovum must be expelled, and that nothing can be done advantageously for the woman until this is effected. We have known a hemorrhage suffered to continue almost to the complete exhaustion of the patient, because pain was considered essential to this end ; though with each return of which, a large coagulum would be expelled ; or the discharge has been augmented by improper attempts to aid its expulsion. Both of these mistaken methods cannot be too severely reprehended—one for blameable supineness, and the other for rash interference. Whatever may be the rapidity of discharge in such cases, it is ever under command, so far as our experience will warrant the assertion, by the use of the Tampon. It should be instantly resorted to, and its effects will be as quickly perceived. If the ovum can be preserved, we save a prodigious expenditure of blood ; if it cannot, we not only do this, but obtain a most important truce, during which time nature achieves the separation and the final expulsion of the ovum, without the farther exhaustion of the patient. For Leroux tells us that when the uterus is opened, the tampon is not only useful in stopping the discharge, but in stimulating the uterus to successful contraction.*

We deprecate with much earnestness frequent and unnecessary touching. This is not only injurious by fatiguing the patient, but by removing coagula that may be important to the stopping of the hemorrhage. This should therefore always be avoided, but at such times as it may become necessary to ascertain whether the mouth of the uterus be yielding to the influence of pain. It therefore can only be necessary in such cases as are or have been accompanied by

* P. 291.

uterine contractions. We also must seriously forbid all attempts to remove the ovum, so long as its greater bulk is within the cavity of the womb, lest we break through its covering and evacuate the liquor amnii. We must let no false theory get the better of multiplied experience ; all of which goes to prove the impropriety of such a procedure : for it is agreed by the most enlightened men upon this subject, that it is mischievous to effect it, and unfortunate when it happens spontaneously. The reason is obvious. The embryo is expelled, and its involucrum is retained ; the consequence is, that the flooding is by this means perpetuated, and much pain and inconvenience, if not danger, is experienced before it is thrown from the uterus. We must therefore repeat it as a rule, that the ovum is never to be pierced before the commencement of the fifth month,* unless the flooding is very profuse, the pains very urgent, and the os uteri pretty well opened.

We are aware in this advice we depart from the very high authority of Baudelocque, (and with whom it is not very safe to differ) as he recommends this should be done always after the third month, provided the membranes do not tear of themselves. But multiplied experience has convinced us, that it is safer to preserve them, so long as the os uteri remains closed, be the pains ever so frequent or powerful, or the flooding ever so profuse, for the one may be diminished by opium, and the other arrested by the Tampon. And if no pain attend, it almost becomes criminal to do so, since the ovum may, by the use of the Tampon and the other remedies above suggested, be preserved. We have ever found, that in such cases, much effort was required to expel the secundines ; nor need we be much surprised at this, when we recollect the strong disposition the uterus has to close at this period of utero-gestation. Indeed, we have repeatedly witnessed the most alarming floodings from this cause ; and we are certain that it was

* Burton, and some others, advise the rupturing of the ovum even at the second month : than this, nothing can be less conformable to either sound reasoning or good practice.

owing to the presence of the placenta, as the discharge always ceased so soon as this mass was removed. When the hemorrhage is thus maintained, we should remove the placenta as quickly as possible; but here is the difficulty. At the early periods of pregnancy, which are comprehended within the first five months, the uterine cavity is too small to admit the hand, or a couple of fingers, or even one; therefore any attempt to deliver it by the hand alone, will almost always fail. If this mass is entirely within the uterus, or even nearly so, the os uteri will be found most generally so much closed, even at the fifth month, as to prevent the introduction of the fingers so as to hook down the placenta; and as we descend from this to the second month or lower, it will be naturally so small as to prevent the introduction of even one. When this is attempted (by the inexperienced especially) it is sure to eventuate in disappointment. Sometimes a portion of the placenta is felt without the os tincæ. If its greater bulk be so situated, we can sometimes remove the whole of it by pressing it between two fingers and withdrawing it, and thus put a stop to the discharge; but we are rarely so fortunate. In such cases we have employed with the most entire success, a small wire crotchet to bring it away. This instrument is very simple in its construction as well as in its mode of action.* The manner of using it is as follows: The forefinger of the left hand is placed within or at the edge of the os tincæ; with the right we conduct the hooked extremity along this finger until it is within the uterus; it is gently carried up to the fundus, and then slowly drawn downwards, which makes its curved point fix in the placenta: when thus engaged, it is gradually withdrawn, and the placenta with it. The discharge instantly ceases, in every case we have had occasion to use it. In every instance to which we here refer, we are persuaded that it preserved the woman. In

* We have given a drawing of this instrument upon a reduced scale: the reduction is one third. We consider this much more simple than the pince à faux germe of Levret, recommended by Leroux and Baudelocque, or that of Burton, commended for the same purpose.

illustration of what has just been urged, we will relate one case of several that has fallen immediately within our notice.

We were called to Mrs. H—— on the 3d August, 1807, who was flooding at the third month of pregnancy; pains were frequent and violent; large doses of the acetate of lead and opium were ordered, together with cold applications externally—the mouth of the uterus was a little open, and the ovum protruding; quiet, cold drinks, &c. were ordered, and we took our leave. Returned at twelve o'clock, three hours after our first visit—the hemorrhage not abated; the pains increased; the os tincæ more dilated, and the ovum more tangible. At three o'clock, P. M. the ovum opened spontaneously, and the embryo escaped—flooding violent; pains trifling; syncope frequent; pulse very small and quick; the placenta in part engaged in the os uteri—a stimulating injection was ordered, with the hope it would bring away the placenta. Four o'clock P. M., the injection failed in the object for which it was given; hemorrhage continues; syncope frequent; pulse scarcely perceptible. The placenta was now removed by the wire crotchet; the flooding ceased instantly; the subsequent symptoms were very mild.

Sometimes, when the ovum is ruptured, and the embryo has escaped, and left its involucrum behind, the hemorrhage may not be violent, but may be of long continuance, at least as long as this mass may remain. In such cases, where time is not so precious to the safety of the woman, we have, in several instances, administered the ergot in twenty grain doses, with very decided and prompt advantage.

The peculiarity of this period consists in the ovum not having the transparent membranes formed; and the practice founded on this, as a general rule, is never to break the walls of it.

Second Period.

This comprises all the time from the fourth and half, or the fifth month, to the entire completion of utero-gestation. The woman is liable to hemorrhage during all this period, by the action of any of the remote causes already enumerated; and

in proportion to the advancement of pregnancy, is the risk from flooding, as the quantity of blood thrown out in a given time is, *cæteris paribus*, greater and more difficult to arrest. When a woman is, therefore, attacked with a discharge of this kind, however moderate it may be in its commencement, we have no kind of security against its increase at any after moment—she is to be carefully watched and most fully advised. We should insist upon her compliance with the rules we have just directed for the first period; and employ the remedies there proposed as early as the nature of the case may require.

We have already intimated, that an hemorrhage from the uterus during pregnancy can only happen from a portion of the placenta being detached; it will follow, that the issue of blood will be in proportion to the extent of surface so exposed; to the advancement of pregnancy, and the force of the circulation. Now, as the advancement of pregnancy is greater in this, our second division, than in the first, the chances for a more profuse discharge of blood are increased in an equal proportion; hence it is agreed upon all hands, that the risk the woman runs is very great; so great, indeed, sometimes, as to be very speedily fatal, since we can have no influence over the extent of separation of the placenta, nor always have control over the force of arterial action.

The indications, however, are precisely the same as in the “first period;” but their fulfilment is not always effected after the same manner. Practitioners are by no means agreed as to the precise mode of arresting the hemorrhage, though they all agree as to the necessity of the most decided and prompt application of remedies for this purpose; they may, therefore, be divided into three classes. The first of which, relies upon the exhibition of internal remedies and external applications. The second, depends upon the administration of medicine, and the use of the tampon; while the third insists there is no safety but in immediate delivery.

For each of these modes, high authority can be cited; and the young practitioner, pursuing his inquiries into this

subject, becomes perplexed by their discrepancy—he hesitates between the different plans, and the period of his uncertainty is a loss of valuable time, or he adopts one the least suited to the case. With a hope, therefore, to lessen this embarrassment as much as our experience will warrant, we shall as briefly as possible weigh the merits of each of these plans.

Those who recommend the first plan, seem to do it upon the principle, that as great and as certain a mischief will arise from the employment of either of the two other methods, as can result from the hemorrhage; hence they condemn the tampon, and deprecate delivery. But in doing this it is evident they have taken but a very superficial view of the subject, or been too much governed by prejudice. That both these methods can and have been abused, we readily admit; but that they are as mischievous, when properly and timeously employed, as an unrestrained flooding, we cannot by any means agree to—but more of this presently. The practice of the first class must, by every man of experience, be admitted to be both feeble and uncertain; nor can we ever recommend it to be exclusively relied upon in any threatening case. In moderate uterine discharges, alum, the preparations of lead, digitalis, and the external application of cold, together with astringent injections per vaginam, &c. may very often succeed; and hence it is our uniform practice, to exhibit the acetate of lead, either by the mouth, or per anum (when the stomach is disturbed,) in cases of this description; in a word, treating them in every respect as we would the mild ones in our “first period.”

But what reliance can be placed upon these comparatively feeble remedies in those cases of hemorrhage which threaten the life of the patient in a very short period of time—cases where the woman is drained of by far the larger portion of her blood; where there is syncope, convulsions, and an extinguished pulse? Can any man reconcile it to his conscience to stand by, waiting the success of a few grains of alum, or of sugar of lead, or of a few drops of the tincture of foxglove, while the woman’s life is rapidly pass-

ing away with the escaping blood? In such cases, success can only attend either of the two or both the other methods, and to these two we must direct the attention of the young practitioner in every case of menacing appearance. Yet we are told of success attending the other, in some desperate instances.

Of the effects of alum in severe cases, we can say nothing from our own experience; but from what we have witnessed in those of a milder kind, we should not be tempted to place upon it much reliance;—if given in small doses, it is insufficient to the end; and when given in larger quantities, it has ever, in our hands, deranged the stomach so much as to be rejected; and of digitalis we can say nothing in any case. But as this remedy is recommended by Mr. Burns,* for floodings accompanied with increased arterial action, it may deserve great confidence to be placed in it; but for ourselves, we should not be much tempted to employ it; not from its want of power over the circulating system, but from its general unmanageableness, and the permanency of depression it sometimes occasions. Of the sugar of lead we have a much higher opinion. This has been considered by some, as a new remedy; but we find it was long since recommended by Etmuller, Friend, Kok, &c.—the two former in the form tinct. antiphthisic. and the latter in injections, combined with vinegar, per vaginum. Its effects are for the most part prompt and useful; and we constantly regard it as an important auxiliary. We have given it liberally, and often with the most decided advantage—and we very rarely fail to employ it in addition to our other means. It can be given by the mouth in the quantity already mentioned, or by injection, as before suggested. We have never, in cases of this kind, placed any reliance upon injections into the vagina, for several reasons. 1st. Because they are very inconvenient in their exhibition, and especially as they must necessarily be rejected very quickly, and thus add to the discomfiture of the patient, by wetting or rather floating her. 2d. Because their effects are

* Principles of Midwifery, p. 289.

both uncertain and transient. 3d. Because they may prove injurious by disturbing the patient, or by the removal of a useful coagulum. After delivery we have sometimes thought them useful, but never to the extent we are led to suppose by some.

It is then our uniform practice in every case of flooding during pregnancy of threatening aspect, or where from the rapidity of discharge the woman's strength would quickly be exhausted, to use, in addition to the means just mentioned, the tampon. We have already said we have found fine sponge the best of any we have yet employed—but where this cannot be procured, fine flax or very well picked tow, or old linen, may be substituted. When the latter substances are chosen, they should be used in portions of moderate size, and well moistened with sweet oil or melted lard—they should be introduced one by one until the vagina is completely filled; the whole may be secured by a compress and T bandage. This latter precaution is not necessary when the sponge is used, if the piece be of proper size. It is introduced, from its compressibility, without the least inconvenience, wetted with vinegar; and we believe it promotes coagulation quicker than any other substance we have hitherto employed, from its numerous cells quickly giving passage to the finer parts of the blood. It almost instantly puts a stop to the hemorrhage; and we are well persuaded in some instances we have been entirely indebted to it for the preservation of the woman's life.

As this remedy is so confidently recommended by us, it may be well, as it will appear a novel one to many, to say something more upon the subject, and endeavour to obviate the objections which have been urged against it by several respectable practitioners. The tampon is by no means a remedy of modern invention. It may be traced, as we are informed by Pasta, in several of the ancient authors;* but Hoffman gave the first clear account of it, and it was used many years ago by Smellie. Leroux, however, is its great defender; and coming from a man of his experience and

* Pasta says it was employed by Hippocrates, Moschian, Egineta, &c. Pasta, vol. i. p. 277.

candor, we felt at once a confidence in it, and first employed it upon the strength of his recommendation. He has given us many cases, where its effects were very decidedly useful, and where it would seem in all human probability, that death would have been the inevitable consequence had it been omitted.

It is truly a matter of surprise, nor are we able upon any conjecture to account for its not being considered by the British writers as a remedy in uterine hemorrhage, from the time of Smellie to that of Burns. It is true, indeed, it is mentioned by Dr. Denman, but he evidently places no reliance upon it; nor does Rigby lay the smallest stress upon its efficacy; he merely says "that should a case occur in which the uterus is too small to admit the hand, and yet the discharge so considerable as to endanger the life of the patient, before nature, by her own efforts, seems likely to effect an abortion, the method recommended by Leroux might, *I think*, with propriety be adopted."* Dr. Merriman merely mentions it *en passant*; and says he has had "reason more than once to think it had been prejudicial"†—but he mentions its employment only in hemorrhages succeeding the expulsion of the placenta. But Mr. Burns makes honourable mention of its efficacy, and seems to place no inconsiderable reliance upon it. Since the publication of his work upon Midwifery, others have regarded it as a valuable mean in arresting flooding; so that at this time it appears to have awakened more attention than it formerly did.

The objections which have been urged against the tampon are: 1st, The danger of local inflammation from the use of the vinegar.

To this it may be answered that were vinegar even attended with this effect, it would be no objection to the tampon, since it would be easy to omit its employment—but our own experience warrants us in saying, we have never in a single instance witnessed it; nor is there the smallest probability of such a consequence following its employment.

2dly, Making a dyke for the effluent blood, it may convert an open hemorrhage into a concealed one.

* Treatise, p. 62.

† Synopsis, James' ed. p. 178.

To this we can with much confidence declare, this can never happen in the cases comprehended in the two first divisions of our subject, since the uterus at both these periods is occupied by the fœtus, and the vagina by the tampon—it is evident, therefore, that no more blood can accumulate than will fill the interstices in the vagina, or the room made by the blood raising the uterus higher in the pelvis: the first of these must be few, if the vagina be properly filled by the sponge or any other substance used as a tampon; and the second must be very limited, since we know this mechanical effect must quickly be at its maximum—for the uterus when thus loaded cannot be made to ascend very high into the abdomen; consequently much blood cannot be expended.

3dly. Coagula may become putrid, and thus do mischief by their decomposition.

This objection is of less weight than either of the two former, since it is by no means necessary to continue the tampon so long in the vagina as to run any risk from putrefaction, twelve or fourteen hours being the longest periods necessary for its presence; at the expiration of this time, Leroux and others advise its removal, and in this we concur with them.

4thly. It may occasion a rupture of vessels, agreeably to Van Swieten, by stretching the ovum from the sides of the uterus.

This cannot happen but in those cases where the os uteri is pretty well dilated; and even in these, such effect is very problematical—but in this latter case, were it even true, no evil could result, since the fœtus under such circumstances must sooner or later be thrown off, as the uterus would be certainly thrown into action—we shall presently say, we regard this remedy as of high utility in cases of this kind.

5thly. It will, according to Kok, always be followed by the expulsion of the fœtus, as it always provokes uterine contraction.

We need not be much surprized at this assertion of Kok, since he supposes the orifice of the uterus is also to be

plugged; now as we never consider this necessary, we cannot consider his objection of much force.*

But although Kok thinks expulsion will follow the use of the tampon, he still bears honourable testimony to its efficacy in arresting hemorrhage in threatening cases; he says, "Ce procédé (namely the tampon) est infiniment préférable à ceux de Mauriceau, et de Puzos;" (that is, rupturing the membranes) "il n'augmente jamais l'hémorragie, il la ralentit et l'arrete souvent."†

The mode of action of the tampon in stopping hemorrhage, is precisely that which nature employs when she alone effects the same end. A coagulum is formed from the tampon to the mouths of the bleeding vessels, and thus puts a stop or very much diminishes the farther issue of blood. It would seem from all we know upon this subject, that there is a strong disposition in the cut or divided extremity of a blood-vessel when at rest, or nearly at rest, to form a coagulum within itself for the purpose of putting an end to the farther issue of this fluid—hence the importance of coagula at the mouths of the bleeding arteries, the formation of which is the first step towards spontaneous suppression. Puzos‡ many years since had pretty nearly the same notion upon this subject; he said that the coagula acted as corks to the mouths of the bleeding vessels.

It has been supposed by several, that after the suppression of an uterine hemorrhage arising from a separation of a portion of the placenta, a reunion takes place between the separated parts; we do not believe this, as the connecting medium between the uterus and placenta must necessarily be destroyed, or so much injured as to render it improbable it can ever serve the same purpose again, after the same manner—the vessels are certainly ruptured by the se-

* Pasta, p. 279.

† Pasta, p. 277.

‡ "Ces sages precautions ont suspendu souvent, et quelquesfois ont fait cesser des pertes de sang accompagnées de petits caillots; non pas en soudant, pour ainsi dire, à l'intérieur de la matrice les portions du placenta séparées, mais en donnant le temps au sang arrêté à l'embouchure des vaisseaux de s'y cailler, et d'y former de petits bouchons moulés sur leur diamètre, capables d'arrêter le sang."—*Mem. de l'Acad. Tom. I. p. 211.*

paration or their extremities so exposed, that there is scarcely a possibility they can be again united and serve as a bond of union between these two parts. Nor is it more probable that a union would be effected by the effusion of coagulable lymph after the manner it is performed in many other portions of the body, since this most likely would be mischievous by its firmness. Did a union take place in this way, every woman who was thus situated would run the risk of an adherent placenta—besides, we have repeatedly been able to detect after the expulsion of this body the separated portion, in cases which had been preceded some time before by flooding; this betrayed itself by being very much darker than the other portions, and being covered by a very fine layer of coagulated blood.

The internal remedies for the suppression of uterine hemorrhage, when successfully employed, must act in such a manner as to dispose the blood to a more speedy coagulation, or immediately upon the opened extremities of the bleeding vessels, so as to induce a contraction of them. Hence, the almost universal employment of that class of medicines called astringents, with the expectation of all being more or less efficacious. Leroux* forbids them in uterine hemorrhage, after delivery; but he does this upon a wrong principle; he says, “dans l’hémorragie utérine violente qui succédé à l’accouchement, ils ne peuvent être d’aucune utilité. Pour s’en convaincre, il suffit de se représenter la route qu’ils sont obligés de suivre avant de parvenir au lieu où leur effect pourrait être utile, le temps qu’ils mettent à parcourir ce trajet, et les changemens qu’ils éprouvent avant d’y arriver.”

In like manner from their mode of action, Leake† objects to the use of astringents or styptics in this complaint, and as we conceive, upon no better ground than Leroux; for we know, that certain of them, as the sugar of lead especially, sometimes produces the most decided effects, let the mode of its doing so be what it may. In many instances it seems to exert a control over the bleeding vessels, as

* Observations, &c. p. 200.

† On child-bed fever, vol. II. p. 301.

prompt as the ergot does upon the uterine fibre ; and from the extent and certainty of this action, we might be tempted, without doing much violence to the delicacy of medical speculation, to call its action specific. In a word, we may justly question, whether any internal remedy can be successful in uterine hemorrhage, which does not exert an action somewhat specific.

Since then, experience and observation have frequently taught us the value of certain applications or remedies in uterine hemorrhage, it is proper they should be employed while ever their chance of success is probable, or even when they can be made auxiliary; but they should never be depended upon beyond the time it is usual to witness their effects, in cases requiring farther management—so, neither internal remedies nor external applications should be exclusively relied upon, longer than is decidedly consistent with the safety of the patient; for neither astringents of any kind, nor the tampon can be availing in all cases—and when they fail there is but one resource, namely, delivery; the consideration of which, brings us to the mode employed by the third class of practitioners for stopping uterine hemorrhage.

From the time of Mauriceau and Dionis, to the present moment, the number belonging to this class is very considerable ; and if numbers were merely considered, the weight of evidence would be in favour of this practice. The want of proper knowledge in treating uterine hemorrhage by other means, the fatal rapidity sometimes of its termination where rupturing of the membranes, or delivery was not performed, or where a feeble plan had been pursued ; the occasional success of these plans, together with almost the certainty of uterine contraction after this organ is emptied, and the influence of this contraction in arresting the bleeding, has but too easily and two generally found advocates for its almost exclusive employment. Thus Lamotte* thought it impossible to restrain hemorrhage when the placenta was detached in part or entire, but by the extraction of this mass ; Dionis declared we should not defer the delivery of the fœtus, if

* *Traite des accouchement.* Obs. 216.

blood in great quantity, and without interruption escaped from the uterus.* Mesnard advised delivery if there was a flooding sufficient to cause fainting;† and Heister‡ and Puzos,§ were of the same opinion, &c. &c. for it would be easy to multiply authorities to considerable extent to the same end.

The advocates for delivery as the only means of arresting hemorrhage, may be divided into two classes; the first, into those who paid no regard to the condition of the uterus when the operation was undertaken, but proceeded immediately to the extraction of the child. The second, into those who evacuated the liquor amnii, with a view to promote the contraction of the uterus, and by this means put a stop to the flooding—these last may be subdivided into three—1st, Those, who paid no regard to the situation of the os tincæ when they ruptured the membranes; but when this did not immediately succeed, by forced means entered the uterus with the hand, and immediately effected the delivery. 2d, Those, who having torn the membranes and gained the feet, were contented to bring them to the orifice of the uterus, and then trust to the natural efforts to perform the delivery. 3d, Those, who never pierced the membranes, but when the mouth of the uterus was either dilated or dilatable, and who after rupturing them, permitted them to escape gradually, and finished the delivery very gradually, or waited for the efforts of nature.

From the improvements which midwifery has received within the last fifty years, we should not have expected to have met with an advocate for indiscriminate delivery in a modern writer upon this subject; yet in Meygrier we find that advocate. As he is a late writer, and one of reputation, it is to be supposed his directions for the treatment of floodings, would comprise the best opinions, founded upon repeated experience; and that any directions he might give as an author and as a teacher, would be the result of mature

* Des operations, p. 249.

† Pasta, p. 170.

‡ Surgery, part 2d, p. 957.

§ Mem, de l'Acad, vol. I, p. 224.

reflection and observation. But, instead of this we find him recommending immediate delivery, whether the uterus be dilated or not—as this is a point of high importance, we shall give his words and reasoning upon this subject.

“ Enfin, quelque soient les moyens que l'on ait employés pour combattre la perte utérine, lorsqu'elle est assez violente pour mettre en danger les jours de la mère et ceux de l'enfant, il faut de suite avoir recours à l'accouchement forcé ou contre nature. Le col est-il dilaté, on pénètre sans peine dans l'intérieur de la matrice, on perce les membranes si elles ne le sont pas déjà, et on termine l'accouchement par les pieds. Le col est-il dur et fermé, on se sert du moyen si bien décrit par Celse, c'est-à-dire que d'abord on introduit le doigt indicateur seul, puis le doigt du milieu, ensuite le doigt annulaire, et successivement toute la main; et, après avoir ainsi vaincu sa résistance, on se comporte comme dans le cas précédent. Je suis loin cependant de partager l'opinion de quelques auteurs qui prétendent que, dans un cas de perte, même des plus abondantes, il faudrait tempérer, en cherchant à pénétrer dans la matrice, on trouvait le col dur et fermé; dans la crainte, disent ces auteurs, de le contondre et de causer de la douleur à la femme. Mais pourquoi attendre? La femme est en travail; et quel est l'espoir de l'homme de l'art? Est-ce que la douleur momentanée, causée par la dilatation du col, et même sa contusion, doivent être mises en parallèle avec le danger qui menace la vie de la femme et celle de l'enfant? Non seulement on doit vaincre la résistance du col, lorsque celle-ci s'oppose à l'introduction prompte et facile de la main de l'accoucheur dans la matrice, mais les meilleurs praticiens n'ont pas craint de conseiller l'incision même de cette partie dans le cas d'une résistance invincible.”*

This daring practice we confidently hope will never be pursued by any one, especially the cutting part: first, because it is contrary to all experience; and secondly, because it can never be necessary, but when the os tincæ is in a dis-

* *Meygrier Nouveaux Elémens, &c. p. 271.*

eased state ; a circumstance of such rare occurrence connected with the other, as scarcely to be called an exception.

That the most mischievous consequences have followed the practice of those who compose the first class* just mentioned above, we have the authority of Pasta,† who deprecates the practice as both cruel and dangerous ; of Kok,‡ who says he has seen it followed by inflammation of the womb ; of Leroux,§ who declares it to be dangerous to both mother and child ; of Baudelocque,|| who insists that nothing can justify the accoucheur who persists to deliver while the neck of the uterus retains its natural thickness and firmness. And we ourselves once witnessed death as the consequence.

The method pursued by the first division of the second class, is not free from serious inconveniences ; and they are, perhaps, scarcely inferior to the first, as the same violence almost is obliged to be committed. The plan of the second division of the second class, (which we shall in conformity with custom call Puzos' method) is far from being the one most conformable to the principles of the art, since in its performance *great* violence is frequently obliged to be resorted to. The objections to this scheme are, 1st. That every flooding during pregnancy is not necessarily followed by delivery ; but if we adopt this method, it must sooner or later take place, to the perhaps certain destruction of the fœtus. 2dly. Because the mouth of the uterus may be so placed as to render this operation very difficult if not impossible, especially when the uterine orifice is still very thick and rigid ; for Puzos¶ himself confesses he was an hour or more before he could pierce the membranes ; and this was a loss of most precious time to the patient, as the flooding still went on, and he began to despair of the success of his method from the excessive loss of blood, and

* Among the first class may be reckoned all the accoucheurs prior to the time of Mauriceau. To the second class, and the first division of that class, belong Mauriceau, Dionis, Lamotte, Deventer, &c. &c. To the second division we may place Puzos, Smellie, Delourie, &c. &c. And to the third we have Leroux, and most of the late writers upon midwifery.

† Vol. I. p. 132.

‡ Pasta, p. 276.

§ P. 241.

|| Vol. II. p. 90.

¶ Mem. Sur les Pertes, &c. p. 336.

was fearful he should be obliged to have recourse to forced delivery. 3dly. That hemorrhage does not always cease after the rupture of the membranes, but on the contrary sometimes only manifests itself at that time. 4thly. That the presentation of the child, and the presence of the placenta over the mouth of the uterus, will render this method ineligible. 5thly. It is sometimes impossible to make a forced delivery, especially from the fifth to the sixth and half month; of this Lamotte* gives an example, and Smellie† another—and we ourselves once saw a similar failure. And above all, they have not pointed out any alternative when their plan shall have failed.

It is then but upon the method of those comprising the third division of the second class, or those who never pierce the membranes, but when the os uteri is dilated or dilatable, that we can safely place reliance in cases of severe flooding.

It may be asked, what are we to do in cases of profuse hemorrhage, at any period from the fifth month to full time, when the discharge threatens the life of the patient, and when the os uteri is both closed and rigid? Are we to silently witness her death, rather than employ some violence to relieve her? Certainly not. If there really was no other remedy, forced delivery with all its disastrous consequences, might be justifiable; but as we have the power of plugging the vagina, and thus prevent the farther issue of blood, we should have immediate recourse to it: and this plan, so far as we have witnessed, has not yet failed; and this experience is so supported by that of Leroux, as to entitle it to the utmost confidence. By this means time is permitted to the natural agents of delivery for the performance of their duties, and this is done for the most part with both certainty and success. We could illustrate this by appropriate cases, but we have already exceeded the bounds we had prescribed to ourselves for the consideration of this subject. We shall refer to Leroux for farther confirmation.

The importance of the Tampon is perhaps never so clearly

* Obs. 245.

† Collect. 33, No. 2. Ob. 1.

demonstrated, as when it is employed in those cases where the flooding has proceeded to almost complete exhaustion—where every ounce of blood is of immense value. In such cases (before delivery) we have seen it arrest a profuse flow in almost a moment, and where the farther loss of a few ounces must have been followed by death. Syncope, and even convulsions, have ceased upon its application.

There is no greater error in obstetric practice, than the opinion that fainting is a desirable event. That it has been useful, *quo ad hoc*, must be confessed ; but who in his senses would wait for this as a remedy in uterine hemorrhage, since it can only occur from the extreme weakness of the patient? Who would wait for this forlorn effort of nature, when he could command a Tampon? If the practitioner were absent during an exhausting profluvium, and learnt before he could exert his skill that the patient had fainted, he might suppose it to be useful *pro tempore* ; but he should never look upon it but as a *dernier* remedy.

Dr. Denman's opinion upon this subject is replete with mischief. It makes a young practitioner indifferent to the quantity of blood that is wasting, because a state of fainting has not yet come on—and when this condition comes on, he hails it as a most friendly visitation—forgetting that fainting is a decided proof of extreme exhaustion, and that his patient may never recover from it. Dr. D. emphatically calls it “a remedy provided by nature for averting the immediate danger of all hemorrhages, and to prevent their return.” Who with this belief would not rather invite fainting than avoid it? But let us not be deceived by terms. That a state of syncope favours or promotes coagulation, is agreeable to all observation ; but whether this arises from an inscrutable law of the animal economy, and for purposes entirely out of view, or instituted for the end assigned by Dr. D., may admit of much doubt. For, were it for this latter purpose, it would be much more advantageous to the individual to have it answered at a much less expense, or at a period much more suitable than the one at which it takes place—for, on such occasions, it would be

much better to imitate nature in the end, than in the means; and this is what is constantly aimed at, when we use lead, digitalis, the tampon, &c.

Again, we cannot agree with Dr. D. in his proscription of "cordials or stimulants," in the state of extreme exhaustion to which women are sometimes reduced by floodings, we think we are as certain of the propriety of our practice in this instance, as we are of any other; and we employ them, whenever the pulse is very much reduced, or extinct, the extremities cold, the breathing hurried and short, vision imperfect, and voice almost inaudible, with the most decided advantage. It is true, we administer them with caution, but with steadiness; and in such quantities as shall neither offend the stomach, nor invite too much reaction. In this we persist, until there is evidence that the system will react—so soon as this appears, we desist from all stimuli, nor return to them, but upon a fresh necessity being created.

There is another position of Dr. D.'s, arising from his particular views upon this subject, which, to say the least of it, wants confirmation—namely, that "during faintness, the advantage arising from the contraction of the uterus, is likewise obtained." We have no hesitation in saying we have repeatedly seen precisely the contrary happen—we will illustrate this from one of several examples. Mrs. B. was delivered after rather a tedious, though pretty severe labour; the placenta was in due time spontaneously expelled, and the uterus was well contracted. About half an hour after we had taken our leave, we were very suddenly summoned to Mrs. B.'s bed side, as she was extremely faint, and had lost considerable blood. We immediately commenced a brief friction with the hand upon the abdomen, and continued it until the uterus was felt firm under it—the discharge immediately ceased—in a few minutes after Mrs. B. told us again she felt very faint; at the same moment the uterus was found to become flaccid under the hand, and again there was a return of discharge—the friction was continued until the uterus was made to pucker itself up; the faintness

off, and every thing promised well, until another attack of syncope again relaxed the womb, and another gush of blood instantly followed ; in this way did the faintness and relaxation of the womb follow each other for eight or ten times ; but a perseverance in the friction and the exhibition of some wine and water, eventually overcame the disposition to faint and there was no farther return of the relaxation or of the flooding. Now, in this case, the state of faint was constantly followed by a relaxation of the uterus, so that when syncope arrests hemorrhage, it must be more by the formation of coagula, than by effecting the contraction of the uterus.

And though it is strictly true, as Dr. D. asserts, that the uterus "acts or makes its efforts to act, in sleep," and if we are to believe him and others,* "sometimes even after death," yet it does not prove that a state of faintness is favourable to this end. Indeed the uterus appears so independent, in many instances, of any condition of the other parts of the body, that it may be said, with the greatest propriety, to be governed by laws and conditions of its own, and over which other portions of the system do not seem to exert the smallest control. Who has not seen an alarming flooding from the inertia of this viscus, in a woman whose physical strength has been almost in excess? And on the contrary, witnessed its firm and secure contraction, where every other power almost has been exhausted by previous disease?

As it is confessed that after the failure of the remedies recommended for the suppression of hemorrhage, the application of the tampon, &c. that there is but one means left in our possession by which the flooding can be arrested, and the life of the woman preserved—yet it may be asked, is there no condition of the patient in which it would be improper to attempt delivery, besides the rigidity of the os uteri. To this we answer yes—we would say, that a woman reduced to the last extremity of weakness, but with whom there should be a suspension of the discharge, should not

* Baudelocque, Leroux, Kok, &c.

be meddled with, so long as the hemorrhage was kept in check. But suppose the same degree of weakness, with a continuance of the flooding, should we in such case attempt delivery? We have no hesitation in answering in the affirmative—but previously to the operation, the condition of the patient should be candidly stated to her friends; it should be undisguisedly declared, that no undue calculation should be made of the chance from delivery; but as it offers the only possible chance of relief, it should be adopted. We should be the farther encouraged to do this, as it now and then has happened that the woman has recovered, even contrary to all expectation.

Hitherto, we have said nothing of opium as a remedy in uterine hemorrhage; the reason is simply this—it never in our hands has merited the smallest commendation, or met with the slightest success; of course we are not of opinion it deserves the encomiums which have been so lavishly bestowed upon it by Dr. Hamilton and others. We have read dispassionately, and with care, a review of Dr. Stewart's book upon this subject (the work itself we have never been able to procure) and have examined the cases detailed there; and we must for ourselves declare, we have not the slightest belief that the opium had the most remote agency in arresting the floodings, for which it was administered—the cessation uniformly appeared to be the result of the natural powers of the system in general, and of the uterus in particular. That it is frequently highly beneficial at any period previous to delivery in allaying pain, and in this way putting a stop to further mischief, we most freely confess—but we can yield nothing more. We are not alone in this respect; Dr. Denman seemed to entertain a similar opinion; and Barlow has advanced the same sentiments.

It may be proper to say a few words upon the subject of cold applications; as no remedy has been more extensively employed, or more certainly abused. Cold as a means to arrest flooding, is in almost universal employment; is usually one of the first resorted to, and the last that is abandoned—it has acquired so much popularity among the

vulgar, as to render it unsafe to the reputation of a practitioner to omit it in his treatment of this complaint. But, though confessedly an agent of great power, it has nevertheless its limit of usefulness, and beyond which it should never be urged—its efficacy is entirely confined to its influence over the circulating system, by diminishing its vigour and abating its velocity. When these ends are answered, it is truly doubtful whether it should be further persevered in; at least its value is much diminished. It is our custom to employ it very liberally, and sometimes, if the case be urgent, at a very low temperature—in general the best mode of applying it is by a large bladder, as has already been directed—but in very sudden and alarming cases, we have found teeming it from an height upon the abdomen, to have a very decided preference, from the promptness and extent of its effects. But when the pulse flags, and the woman is much exhausted, we not only forbid it, but pursue the opposite plan, by having a warm blanket or other articles to supply its place. During the use of cold water, &c. to the abdomen, we are constantly in the habit of ordering warm applications to be made to the feet and legs; a bottle or jug of warm water well corked, is one of the best and the handiest—this last direction we are very particular never to omit, should the feet and legs be preternaturally cold. We also should be particularly careful not to wet the bed and clothes of the patient, if it can be possibly avoided, as it creates much inconvenience, without doing the least good—it will render the poor woman's situation extremely unpleasant, besides obliging her to be disturbed, that dry things may be substituted.

The injecting of cold water, cold alum-water, the solution of the acetate of lead, the introduction of ice into the vagina and even into the uterus, &c. have all been practised, and it is said, with advantage. The merits of such applications must rest upon the authority of those who recommend them, for we are free to confess we have no experience in either of them, before delivery, nor should we be tempted to rely upon them in very pressing cases.

(To be continued.)

ART. VIII. *Notice of some further Physiological Experiments.*

By J. O. B. LAWRENCE, M. D. and B. H. COATES, M. D.

WE regret that accidental causes have prevented the preparation of a description of our experiments, which we intended publishing—and as since our last insertion in this Journal, we have met with some additional results, it was thought not without utility to lay them at present before the medical public. Their imperfection is a greater object of regret, and we are well aware that such will ultimately be their character, as the difficulty and extent of the subject have far surpassed our anticipations.

Several direct experiments on the stomach, separated by ligatures from its connexions with the œsophagus and the lower part of the duodenum, have been sufficient to show, that prussiate of potass is conveyed into the general circulation, when either the vena portarum or the thoracic duct, together with the great lymphatic trunks of the right side, are separately tied: but that if both these routes are obstructed at the same time, no quantity capable of being rendered evident by the tests which we used, could be found to enter the system.

In one instance, we separated the stomach from all its connexions by tight ligatures, and then introducing prussiate of potass, returned the parts, in order to ascertain the effect of infiltration on our results. The salt was not discovered in any of the fluids of the body, within a time equal to that allowed for our previous operations. We repeated the experiment of Magendie, in which he succeeded in poisoning an animal, and producing the specific effects of nux vomica on the general system, by introducing that article into a wound in a limb, whose only connexion with the body was by means of two currents of blood flowing through quills. We have the gratification to be able to bear witness to the accuracy of that gentleman's reports, as far as relates to the case now mentioned. We have also repeated it, with the additional circumstance of throwing prussiate

of potass into the separated limb. This substance was found within that part of the femoral vein which remained attached to the body. This may be considered as a corroboration of the above.

In extension of the experiments formerly made for the Academy of Medicine of this city, on the supposed absorption of coloured fluids, cochineal, arnatto, and Prussian blue were thrown into the abdomen and the cellular substance of cats—but without discovering the colours in the living vessels.

We have repeated some of Professor Mayer's experiments on absorption from the lungs, with the same small animals as above. Our results have been, as far as we carried our inquiries, similar to his. We have not had an opportunity of seeing Professor M.'s work, and have been obliged to content ourselves with a review of it. We have, hence, no means of learning, whether he met with the remarkably rapid infiltration of the prussiate through the texture of these viscera, which reached the parietes of the thorax, and very much perplexed our inquiries. It was obvious, however, that the passage of this salt was peculiarly rapid through the pulmonary veins to the left side of the heart—a considerably longer time being required to reach the other cavities.

C A S E S.

ART. IX. *A Case of Traumatic Tetanus, successfully treated.*
(Communicated in a letter to the Editor.) By ROBERT MURPHY, M. D.

MY DEAR SIR

TRAUMATIC Tetanus has long held a conspicuous rank among the opprobria of our art. Thomas, treating of it in his work on the Practice of Medicine, makes the following sweeping remark: "When tetanic affections arise in consequence of a wound, puncture, or laceration, they are almost sure to prove fatal, as I never but once met with a recovery under such circumstances during a very extensive practice and long residence in the West Indies." Many other writers of equal respectability, hold the same gloomy and discouraging language.

"Knowledge," says the celebrated Hobbes "is power." The converse of the proposition is equally true. In every field of employment, ignorance must have an unavoidable tendency to enervate and distract exertion, and to shut out every rational prospect of success.

Applying these remarks to the history and present condition of the disease under review, we shall not be astonished that so little has been done towards the settling of a plan of treatment calculated to inspire confidence in the minds of practitioners. Notwithstanding the high degree of interest which the subject has awakened, and the very active investigation which has followed, the pathology of tetanus is still involved in the deepest obscurity. Until the darkness which rests upon this point shall be dispelled, we cannot indulge a well grounded hope of being able to meet

its attacks with any degree of calm and confident assurance of triumph.

I am induced to offer you the following history of a case which came under my care, neither from any novelty in the origin or symptoms of the disease, nor from the introduction of any new remedy in the treatment. My patient happily and unexpectedly recovered, and the rareness of such good fortune constitutes the chief ground of my communication.

Some time in the fall of 1816, while living at my father's, and engaged one evening in the field with my gun, I received an urgent summons to repair to the house to see a negro man who was represented to be bleeding to death. I attended the messenger as soon as possible. Though before I arrived the wound had been bound up and the hemorrhage had ceased.

Upon inquiry into the history of the accident, I received the following relation.

The subject of this communication had gone down into a well for the purpose of cleaning it out. While engaged at the bottom, requiring a large stick for some purpose or other, he requested his assistant at the windlass to throw him down one. The fellow accordingly soon procured one, nearly as thick as one's wrist, and sharpened at the end, having been recently used as a bean pole. Obedient to orders, and without thinking a moment of the danger, he let it drop into the well. Inclining in its descent to the side which his companion had taken, it fell with the sharp point foremost immediately upon his head, perforated his hat, and wounded him in the manner I shall describe.

Ascertaining that there was no necessity for immediate interference, and it being now dark, I postponed the examination of the wound until the following morning. At the time appointed I went to see my patient, and having removed the bandages and washed away the grumous blood, &c. I had a ready view of the amount of the injury which he had sustained.

The wound was seated a little on the left of the vertex,

about two inches in extent, not rectilinear, but forming two irregular sides of a triangle, with rough jagged edges. The scalp was completely torn up, and separated from the subjacent aponeurosis, which was also wounded.

Aware of the tendency of such injuries to beget tetanic affections, I had instant recourse to the preventive remedy of Darwin. A large dossil of lint well soaked in a mixture of spirit of turpentine and laudanum, was applied in close contact with the lips of the wound, renewed in the evening, and directed to be continued. Being a little feverish, I gave him a saline cathartic.

From this period nothing remarkable occurred until the morning of the fourth day from the happening of the accident. At this time, notwithstanding a very free discharge of pus, and of the best quality, was issuing from the wound, alarming indications of lock-jaw had appeared. He complained of stiffness about the angles of his jaws, a little difficulty of deglutition, and occasional twitchings about the back of his neck. Upon inquiring into the state of his bowels, he informed me that they had not been moved for two days. To correct this I gave him a large dose of calomel and jalap.

When I went to see him the next morning, I found him in bed. The attempt to open his bowels had been unavailing. He had passed the night in great restlessness and anxiety, and complained a great deal of a "strange sort of jerking" about the back of his neck and down along the course of his spine. Upon examining his jaws, I discovered that they could only be separated a little way, and he complained of acute and increasing pain about the extremity of the sternum. Whenever he moved or attempted to speak, or whenever any sudden impression was made upon his senses, a fit of spasm was induced.

It was evident that the disease was now rapidly forming, and about to assume that shape to which the appellation of emprosthotonos has been assigned. I hesitated a moment what course to pursue. Balancing between the antispasmodic and mercurial method, so highly extolled by some, I

determined at length to adopt the former. Accordingly about 200 drops of laudanum, together with about two thirds of a pint of good old rum, were administered in the course of the day. An unction consisting of spirit of turpentine, laudanum, hartshorn, and oil, was directed to be well rubbed in upon the back of his neck and spine, five or six times a day. I made another effort to open his bowels with a still larger dose of calomel and jalap than the former, without any better success. A strong purgative enema, with the addition of 100 drops of laudanum, hoping thereby to effect a momentary relaxation of the spasms, was next tried, but to no purpose. His diet consisted of Indian meal gruel, highly seasoned with allspice and wine.

I now resolved, as the only ground of reliance, to push the laudanum and rum to a liberal extent. They were accordingly increased from day to day until the quantity of the former amounted to 600 drops, and of the latter to nearly a quart in the course of twenty-four hours. The ointment was continued to be well rubbed in as directed.

The disease had now run on during the space of nine or ten days, and no abatement whatever of its violence could be perceived. The poor wretch was reduced to the last extremity of suffering and exhaustion—the violent retraction of the spine had produced considerable deformity of body, and the rigidity and contortion of the facial muscles imparted a distressing ghastliness to his countenance. His cries might be heard a great way off, and death was eagerly implored as a merciful dispensation.

My constancy sank under the view of his deplorable condition—and I gave him up in despair to his fate. With a view, however, of contributing in some measure to the mitigation of what I imagined the agony of his dying moments, I directed the nurse to give him 50 drops of laudanum, in a glass of rum, as often as he would swallow it. I particularly instructed her not to be afraid of giving him too much, but to administer it boldly to any extent.

The following morning she came into my room with the sad tidings that my patient was dying. I told her I had cal-

culated on it, and was turning off, when my attention was arrested by her mentioning among other grounds of her belief, that his jaws "had got loose, and that he had no control whatever over them."

Struck with this occurrence, I hastened to see him, and you may readily picture my astonishment, when instead of a corpse, I found my patient very greatly relieved. The intensity of the spasm and pain was every where greatly diminished. His jaws had sure enough "got loose," and being greatly convulsed, were constantly opening and shutting to the great concern and consternation of the nurse.

A great degree of collapsion had now come on, which nature seemed anxious to relieve by sleep. His cabin therefore was made perfectly quiet, and in a little while I had the satisfaction to see him slumber profoundly. The disease still hung with surly malignity about the muscles of his face and spine. It was evident, however, that the strength of its hold was destroyed. As the dying spasms gradually retired from his face and body, I was forcibly reminded of the calming of the deep after having been lashed by the violence of a dreadful hurricane.

What amount of rum and laudanum he took the day and night preceding this happy change, I could not exactly ascertain. The nurse however informed me that she had punctually obeyed my direction, and that she had administered considerably more than he had ever taken before.

The day following I found him still mending. He had enjoyed a refreshing night, and expressed great joy in the relief which he felt.

The rum and laudanum were now given at longer intervals, and in diminished quantity. I again administered a mercurial cathartic, which now operated very well. After this, substituting wine for the rum, I began to give him bark. This treatment was continued for about a fortnight, when he was so much recovered as to be able to resume his usual employment. It was several months, however, before the rigidity of the muscles about the back of his neck entirely disappeared. He is still alive and enjoys excellent health.

You will perceive that the foregoing account has not been rendered with the usual precision and exactness of detail. After the happy termination of the case, regarding it as somewhat rare and interesting, I regretted that I had not made a daily memorandum of my attendance. The neglect arose entirely from the conviction which I entertained from the first, that the case would certainly terminate in death. Under this impression, I considered it of course perfectly useless to preserve any record of so common and uninteresting a calamity.

No one, however, can be at all at a loss either for the general complexion of the disease, or for any thing worth inquiring after in regard to the treatment. A sort of general outline embraces, perhaps, after all, every thing that need ever be recorded. The filling up must be left to the future sagacity and discretion of the physician acting at the bedside of his patient—directing his views and adapting his treatment to the endless modifications of feature which may appear.

I would remark, in passing, that I was greatly favoured in my endeavours by the circumstance of my patient's jaws remaining sufficiently apart to permit the free introduction of both food and medicine, and by the power of deglutition being sufficiently unembarrassed for every necessary purpose. It may be also worth observing, that he expressed great comfort under the use of the unction which I have mentioned. Whether the benefit was derived from the mere friction, or from some remedial influence in the mixture itself, I cannot undertake to determine. From his very great eagerness, however, to have it repeated, and his strong declarations of relief under its application, I am tempted to believe that its rubefacient virtue must have had some weight. Would it not be worth trying, to use epispastics or caustic under similar circumstances?*

I shall conclude without torturing my brain, or disgusting you, with any barren speculations regarding either the

* It has been done, and with success, by Dr. Hartshorne of this city, and by other practitioners. Vide Chapman's Therapeutics.—EDITOR.

true character or best treatment of tetanus. Conceiving the disease to depend in the main on a violent excess of muscular contraction, I adopted such remedies as are well known to possess the antispasmodic or relaxing virtues in a very eminent degree. Although this would certainly seem a priori to be the most direct and rational method of attack, and under its auspicious influence my own efforts in the foregoing case were crowned with complete success, I am still by no means persuaded that it would generally succeed. One or two fortunate results (although frequently practised) ought never to sanctify a plan to the purposes of universal and unqualified recommendation. In the present instance, any hypothesis of the kind would stand opposed to too much sound experience, and to too great a weight of authority, to allow it a moment's ascendancy. This much benefit, however, may be derived from my success. It helps to prove that this formidable disease is by no means *invincible*. From this fact we may derive encouragement to meet its attacks, not indeed with the full assurance of victory, but with a sufficient degree to inspire courage, and animate to a vigorous and persevering resistance.

I remain, my dear sir,

Very affectionately yours, &c.

ROBT. MURPHY.

TO NATHANIEL CHAPMAN, M. D. &c. &c.

ART. X. *A Case of Fracture of the Bone of the under Jaw, successfully treated by Dr. Physick, with a Seton.* Communicated to the Editor by THOMAS KER, Esq. of Huntingdon, Pennsylvania.

ON the 29th day of March, 1820, I unfortunately had my under jaw broken in two places, on the right side transversely, and on the left obliquely. I sent, immediately on receiving the injury, for three physicians, who proceeded to

reduce the jaw to its proper place, and to keep it so by means of *bandages*—but, on applying the bandages, the jaw invariably slipped out of place. Several fruitless attempts to secure it were made, on the same, and on the following day.

The physicians continued both days endeavouring to replace it, every fifteen or twenty minutes, when, at length, being nearly exhausted with pain, I was so fortunate as to set it myself—and by tying a handkerchief around my jaws, it remained in place nearly twenty-four hours. But, once more thrown out of place, I set it again—and did the same the following day.

After suppuration took place, and during its continuance, it was discovered by the physicians, that the broken part of the jaw on the left side, extending back, was considerably out of place, inclining outwards—to remedy which, a *compress* was applied, and suffered to remain so long, that the jaw was pressed in further than its natural position.

In three months from the time that the accident occurred, suppuration ceased, and, on examination, it appeared, that the transverse fracture had united, and the other remained without any disposition to unite. The teeth, on this side, were turned from their upright position considerably into the mouth—forming a horizontal shelf over the side of the tongue.

In the month of November, 1820, I came to Philadelphia, and applied to Dr. Physick, who removed the teeth contained in that part of the jaw which was pressed into the mouth. This afforded me considerable relief. But still I experienced great inconvenience from the pain occasioned by the motion of the fractured parts in the broken jaw, whenever I attempted to bite any substance as hard as a crust of bread. My bodily strength gradually decreased, as I had a very sickly appetite, and was rendered incapable of receiving proper nourishment. My frame being debilitated in this manner, I seriously felt the effects of changes in the weather—and every time I contracted a cold, it settled in my jaw, and rendered the broken parts so sore, that for some days

afterwards, I was unable to eat any thing except spoon victuals, and from the slight hopes I entertained of ever recovering from this misfortune, I was rendered truly unhappy, and felt wretched, when compelled to enter into any of my usual avocations.

I returned to Huntingdon in December, 1820, where I remained until the 27th of April, 1822, when I again went to Philadelphia to receive assistance from the skill of Dr. Physick, who introduced a seton from the inside of the mouth, nearly through the centre of the bone—in consequence of which, a discharge of matter took place immediately, and in six weeks afterwards small pieces of bone came out.

At the expiration of eight weeks, the outside of the bone became very much inflamed, and continued so for three or four days, accompanied with very acute pain—after which, the pain subsided, and the inflammation decreased. In the course of the eleventh week, the change for the better was so great, that there was no motion in the jaw, as before, which had united, and has daily gained a considerable share of strength since that time.

On the 26th day of July, 1822, Dr. Physick removed the seton, and from appearances, I have every reason to believe, that in the course of a short time, I shall cease to feel the slightest inconvenience from this dangerous and unfortunate occurrence.

Borough of Huntingdon, July 27, 1822.

ART. XI. *Cases illustrative of the efficacy of Charcoal, in obstinate Constipation of the Bowels, &c. with remarks, &c.* Communicated in a letter to the Editor, by WILLIAM C. DANIELL, M. D. of Savannah.

DEAR SIR,

NUMEROUS as have been the medicines recommended at various times as efficient in obstinate constipation of the bowels, none has as yet acquired and afterwards maintained a substantial reputation in the cure of this troublesome affliction. Our journals, from time to time, have exhibited details of cases, where very different modes of treatment have been adopted, and where the success which has occasionally resulted, has been subsequent to the exhibition of such a variety of means, and frequently of such different characters, that we feel more disposed to attribute the recovery of the patient to the powers of nature, than to the medicines exhibited.

This disease is, I believe, of more frequent occurrence in our climate than in more northern latitudes. It usually seizes on persons subject to indigestion and colic. These are, for the most part, exempted from attacks of our fevers. With the usual remedies, constipation of the bowels has habitually baffled the skill of our profession. In the spring of 1820, I was informed by Dr. William Marshall, of the United States Army, that he had once succeeded in a very severe case of this disease, by the free exhibition of charcoal, and that he had adopted the use of it from an English writer.

A case of this affliction soon after fell under my observation. Having adopted the usual treatment of bleeding, warm bath, mercurial purges, aided by jalap, castor oil, with other active articles of this kind, blisters, &c. &c. all without success, I thought an opportunity now presented of testing the efficacy of the charcoal. I gave a table-spoonful of it every half hour, and at the expiration of about seventeen hours, my patient's bowels were freely evacuated. The discharges, which consisted chiefly of a thick mucus, were coloured by the charcoal. This medicine was then discontinued, and castor oil substituted—the latter, however, evacuating but par-

tially, I had recourse again to the charcoal, which was continued until the patient recovered. My observations since have convinced me of the necessity of continuing the charcoal until the discharges are no longer marked by the presence of slime or mucus, which I have found to abound in very considerable quantities, in all the cases of constipation which have fallen under my care. And, I think, the existence of this matter in the intestines, may explain the cause of failure, not only of powerful enemata, but of cathartics to evacuate them. Lining, as it most probably does, the chief or whole extent of the bowels, it protects their surfaces from the influence of the medicines. The charcoal, probably, exercises a chemical influence upon this matter. The evacuations produced by the charcoal appear to be composed chiefly of this article, and the mucus or slime intimately blended.

Since this case, I have used the charcoal in fourteen or fifteen other instances, and always with complete success. In this disease, the sufferings of the patient are usually extremely great, and I have occasionally, since adopting the charcoal, attempted to relieve them by other cathartics which operate more speedily, but I have invariably failed, and was afterwards compelled to have recourse to that remedy—sometimes, however, not until the third and fourth days of the disease, and always with decided advantage. Further experience has convinced me, that the most speedy, as well as most certain relief, is to be obtained from the free use of charcoal. If it does not wholly relieve, it always very much mitigates the pain in six or eight hours from the period of its first administration—and within my observation, the patient has always been entirely composed before the operation of the medicine upon the bowels. I have, sometimes, from the total absence of all pain, and the great reduction of the pulse, previous to the evacuation of the bowels, apprehended mortification. In one instance, I gave, in conjunction with Dr. Dashiell, between two and three hundred grains of calomel in twenty-four hours—which medicine passed through the bowels unaccompanied by any

other matter. It occurred with Captain Rawson—he was afterwards relieved by the free use of charcoal, but not until about eighteen hours from the time of its first administration. To many, the tardy operation of this medicine may appear as a serious objection to its use. It was formerly so to me, but since I have been convinced of its certain efficacy, and that although it may not act upon the bowels in twenty-four hours, even, after its first exhibition, yet that it will in one third of this time very much relieve, if not wholly remove the pains, &c. This objection appears comparatively unimportant—for what avail a few hours in the cure of a disease, if we can control the sufferings of our patient, and afterwards certainly relieve him?

In relation to the dose of this medicine, the rule which I have pursued is to give it as freely and as frequently as the stomach will allow. The quantity required is considerable. It has a happy influence in lulling the irritability of the stomach, when nothing else which I have used would control the nausea and vomiting of the patient, thus fulfilling the double intention of first alleviating a very distressing symptom, and then removing the disease itself. I usually give from one to three table-spoonsful of the charcoal every half hour or hour: whenever the stomach becomes overcharged with the medicine, the excess is thrown off, and the stomach is again quiet. I give it in lime water, milk, or water alone—the vehicle having appeared to me unimportant.

Whilst speaking of the use of charcoal in constipations of the bowels, I hope it will not be deemed a useless digression, to relate a case which recently fell under my observation, where this article rendered very important service. I was consulted by a lady who habitually suffered very much from gastric irritation during gestation. She was now in the third or fourth month. I found her in bed. She had constant nausea—frequently vomited, indeed had used many articles without retaining any one. This situation had existed for several weeks, and she was much reduced from want of nourishment—she slept very little—her pulse was thin and feeble—her

bowels costive—tongue covered with a thick brown fur. Charcoal, in small doses, mixed in lime water, was directed to be occasionally given. Most of this mixture was retained—her bowels were evacuated—her stomach gradually acquired tone—her tongue assumed a healthy appearance—small quantities of light, nutritious food could now be retained, and in the course of five or six days she was enabled to leave her room, and soon after engaged in her domestic duties. She finds it still necessary, occasionally, to use the charcoal and lime water. It is difficult to appreciate fully the relief afforded in this case by the use of these articles, without having witnessed the emaciated condition of my patient—heard the account of her sufferings, and finally, seen the improvement of her condition under the treatment. It is the only instance of this nature, in which I have had an opportunity of using the charcoal and lime water: the former I suppose to be chiefly the efficient remedy.

Very sincerely, your friend,

W. C. DANIELL.

August 15, 1822.

ART. XII. *A Case in which some distressing symptoms were induced, by a large Coagulum of Milk long retained in the Stomach.* Communicated to the Editor by Dr. PHILIP TYDIMAN.

MY coachman (William Rich) complained early in the month of June, 1821, of great pain and uneasiness of the left hypochondrium—experiencing an oppression and soreness of the stomach, which excited nausea and anorexia. On several occasions during the same month, he attempted to eject what he conceived to be a large worm rising in the œsophagus, and producing a most suffocative uneasiness: recourse was had to an emetic composed of ipecacuan and antimonial wine, which operated freely without enabling

* By consulting the 1st volume of Chapman's Therapeutics, our ingenious and valued friend will obtain some further information regarding the use of charcoal.—EDITOR.

him to expel the load from his stomach. About the middle of the month, his symptoms became somewhat alarming: he complained of cardialgia and palpitation of the heart, accompanied by a full and hard pulse, and at times sluggish and intermitting: he obtained relief by bleeding, which I was obliged to repeat in a few days, from a renewal of the same distressing symptoms. Much attention was paid to the state of the intestines, which were kept open by frequent cathartics, such as the Cheltenham salts, Seidlitz powders, and occasional doses of castor oil: absorbents were often used without any apparent good effect. *As an alterative*, calomel was given every other day, to the amount of three grains at each dose. This practice was kept up until the second week in July, when he was confined to his bed by a fever. His symptoms now increased in violence, and he felt pain and tension of the left hypochondrium, attended by a laborious respiration, a short dry cough, and much difficulty in laying on his left side—his digestion became much impaired, and a distressing constipation of the bowels came on, which was generally relieved by one or more large table-spoonsful of castor oil. I ordered his diet to be light and nourishing. His case certainly bore a strong similarity to an acute hepatitis. It was now towards the close of July, and finding but very little abatement in the severity of his symptoms, I took sixteen ounces of blood from him, which was about the same quantity lost at the two preceding bleedings. To aid me more effectually in this remarkable case, I requested the attendance of Dr. Betton, a respectable and enlightened physician, who on visiting the man was of opinion, that he laboured under an acute hepatitis, and urged the necessity of pursuing steadily the anti-phlogistic plan of treatment. Finding great action of the pulse, and all the symptoms prevailing which have been already described—he advised that sixteen ounces of blood should be immediately taken from the arm, and fifteen grains of calomel to be given—which quantity was repeated every other day for a fortnight—and when the gums and and mouth were affected, we thought proper to desist. At

the interval of a few days the use of the lancet was again called for, and sixteen ounces of blood taken, which in less than an hour after, was succeeded by an increase of fever, and great restlessness. I ordered the saline mixture, and at night I directed him to use the pediluvium, and to drink a pint of warm infusion of serpentaria, into which was mixed sixty drops each of the spirit of nitrous ether and antimonial wine; perspiration was excited, and by the morning the fever considerably diminished. The patient now discovered great aversion to any further blood-letting. His disorder, however, had undergone very little alteration for the better, the same full tense pulse continued, though varying according to the violence or mitigation of the disease. The tongue from the commencement of his complaint was uniformly red and glossy, and inflamed at the edges: his thirst was great—his drink was chiefly gruel, toast and water, and barley water—his food light and nutritious, consisting principally of rice and Indian corn, ground fine and well boiled (commonly termed homony): he was rarely allowed animal food, and *then* only a small piece of broiled pigeon or chicken. His strength it may be readily conceived was much prostrated, though favoured by a naturally robust constitution. In three days from the last bleeding, we with some difficulty obtained his consent to lose about sixteen ounces more blood, which afforded temporary relief, and was in half an hour after followed by a great increase of fever. The saline mixture was now given, and on the succeeding day we determined to vary the practice, and accordingly some blood was extracted by cupping between the epigastric region and right hypochondrium, under which trifling operation he was excessively fretful and impatient. I had a large blister applied over the seat of pain, which appeared to be confined more immediately to the epigastric region. James's powder was given with great effect, to the extent of eight grains, in separate doses of two grains in a little syrup every half hour, producing thereby gentle diaphoresis, which was supported by plentiful draughts of warm snake-root tea.

The fever, which for some days had been gradually diminishing, now intermitted sufficiently to give the cold infusion of bark, united with Columbo powder, and his strength being extremely reduced, he was allowed occasionally a little Madeira wine. Profiting by a clear intermission of fever, I closely adhered to the use of tonics and the soda powders, with occasionally a little calcined magnesia. He recruited so speedily as to be able to move about by the last of August. I advised him to wear a flannel jacket next to his skin, and so soon as his strength would permit he went down to the city, and from thence to Bristol for change of air. He gathered strength so rapidly, that by the end of September he returned, and resumed his usual occupation of coachman. Early in October I quitted my residence near Germantown for Philadelphia, and on the morning of the 12th he drove me out to the country, and in the evening, while preparing to return to the city, he was suddenly attacked with a chilly fit, accompanied by excessive nausea, and in a few minutes after, with the utmost pain and difficulty, he brought up a large compact substance with a smooth surface, and not unlike a sweet-bread—in the violent effort to eject which he was nearly suffocated. On being called to his assistance, I found him scarcely able to articulate, with a pale and ghastly countenance, a general tremor and a cold clammy sweat overspreading the forehead and hands. No time was lost in resorting to every means of reviving him—forty drops of the spirit of ammonia were given to him immediately in a wine-glass of water, and hot cloths were applied to the left side, which from the peculiar sensation he experienced, induced him to fear he had lost the use of it: he next took a glass of strong brandy and water, with a few drops of the ammonia and laudanum—and I ordered him to be conducted to bed, and left him under the charge of an excellent nurse, who took every possible care of him. To my great surprise, he returned early on the day following to Philadelphia. The substance must have remained for several months in his stomach, giving rise to all the painful sensations and long illness which he had experienced. He

was a man of regular and temperate habits, and had been in the daily practice of drinking milk whenever he could obtain it. The gastric juice must have been in the most vitiated state, and the digestive powers consequently greatly impaired. It is somewhat difficult to say by what agent this huge piece of hard coagulum, so long accumulating and retained in the patient's stomach, was formed. The symptoms so closely resembled those which attend an affection of the liver, that any physician might have been easily led into a mistake. The patient complained chiefly of pain about the epigastric region, which was sore and hard to the least pressure of the hand. Whether a morbid acrimony of the gastric juice curdled the quantity of milk he drank, and which was in time converted into a mass of cheese, (constituting the disorder termed tyrosis,) or whether any other agent operated to induce his disease, is difficult to decide. Certain it is, however, that the symptoms were such as to lead me at times to suspect that not only those two most important organs, the liver and stomach, were seriously affected, but that even the heart was not free from inflammation. The substance was hastily and with much difficulty inclosed in a large open-mouthed bottle of brandy. I cannot say precisely, but I think it was about an inch and a half in thickness, and from five to six inches in length. He made several violent efforts before he succeeded in bringing it up—the constant use of tonics had no doubt corrected the state of the gastric juice, and so braced the stomach as to give full force to the muscular action. At the request of Dr. Tucker I delivered to him the substance to place in the possession of Dr. Physick, who, I understand, terms it cheese, and thinks it must have got down into the duodenum. The patient after this was attacked by a regular tertian fever, which was fortunately made to yield in a fortnight to sudorifics and tonics: he took no other medicine except occasionally a tea-spoonful of calcined magnesia, and the soda powders. He abandoned the practice of drinking milk, and continued for some weeks the use of tonics, and a generous diet. He was so much reinstated in health as by the 20th of October to be able to fol-

low his regular occupation, and commenced a journey of near eight hundred miles to the south, which he performed with very little inconvenience—and continued in my employment until the middle of April, when he left me in good health : nor was he confined a single day to his bed by sickness, from the 20th of October up to the time he quitted me in South Carolina.

June 24, 1822.

ART. XIII. *A Case of Ruptured Uterus, read before the "Pittsburgh Medical Society," July 2d, 1822, and communicated to the Editor.* By Dr. WM. CHURCH, of Pittsburgh.

On the 23d of June, 1822, at five o'clock, A. M., I was called to visit Mrs. D., aged thirty-six years, the wife of a respectable man of this city, who was in labour with her fifth child. On my arrival, I was told that she had marketed for her family the day before, and that she was taken in labour at eleven A. M. immediately upon her return home. From that time she had been attended by a midwife, who stated to me, "that from the beginning she had regular labour, and that she had slept between the pains, and was as much composed as could be expected during the whole time—that the membranes had ruptured, and that the waters were discharged about an hour and a half previous to my arrival—since when she had about four pains in rapid succession, and that she thought six or eight more would have effected the delivery." She also stated to me, that "Mrs. D. had made water frequently during the night, and that a purgative glyster had been administered, which operated well." On examination, *per vaginam*, I found that the head of the child had descended low, and was wedged in the pelvis. By passing my hand over the abdomen, I was much surprised to find that it had, in a great measure, lost its globular form—and that just above the pubes, on the

right side, I could distinctly feel through its parietes the child's elbow. I therefore apprehended a rupture of the *cervix uteri*. I inquired whether at the time the pains had left her, she felt any thing break within her? or if she had experienced any unusual feelings? Her answer was, "that she had not felt any thing break within her, nor any movement of the child, nor any unusual pain!! And that she now felt only a little exhausted." As her pulse was full and tense, and her countenance perfectly natural, and as the symptoms were not such as characterise rupture of the uterus—such as the feeling of something break or give way within the womb—the lancinating pain—the piercing cry—syncope—hemorrhage—convulsions, &c.; the absence of the ordinary signs of rupture led me, amidst much suspicion of this event, to cherish the hope, that the *cervix uteri* had spasmodically contracted around the child's elbow—and under this impression I took sixteen ounces of blood from the arm, on which her pulse became soft. I then gave one drachm of powdered ergot, which having no effect in an hour, I repeated the dose. Soon afterwards she became composed, and slept quietly until nine o'clock. As there were no urgent symptoms, I thought it prudent to defer the delivery for a short time.

At half past ten, the ergot not having the anticipated effect, and as her pulse was rather weak and sinking, I thought it advisable to call in a consulting physician, and Dr. Lewis attended, who advised immediate delivery. With the forceps I made several unsuccessful attempts to bring down the head, and also in vain endeavoured to disengage it with the lever. Next I tried to fix the blunt hook in the ear—when the child, at once, receded with a hissing noise through the rent into the cavity of the abdomen. My hand being introduced in order to turn and deliver by the feet, profuse hemorrhage and syncope supervened—pulsation ceased at the wrist, and she apparently dying, it was thought best to desist and leave her to her fate. Her extremities became cold, the pupils were dilated, and her body was covered with a cold clammy sweat—notwithstanding which

her breathing was natural, her mind rational, and she continued to speak till within ten minutes of her death, submitting to her fate with Christian-like fortitude and resignation. She died on the morning of the 24th, between twelve and one o'clock. About four, A. M. leave was obtained to open the body—which was done at my request by my friend Dr. Wm. F. Irwin, in the presence of Dr. L. Callaghan and myself.

Dissection.

The integuments being divided from the umbilicus to the superior anterior spinous process of the ilium, on each side—the first object presented to view was the child's head, which lay in the position that it usually takes when about to enter the superior strait of the pelvis. On lifting the child it was discovered that every part of it had completely escaped from the cavity of the uterus. The child was a male, and unusually large, and to all appearance had been about forty-eight hours dead. Next, the placenta was removed from its situation near the *fundus uteri*, and it was also found to have no connexion with the womb.

The uterus was next examined, which presented a general and extensive laceration from the *fundus* to its connexions with the bladder and rectum. Its parietes were reduced from the ordinary thickness to that of paper, and more particularly so at the insertion of the fallopian tubes, where it was quite transparent, and of a frail cobweb-like texture. We then sponged up about a pint of blood from among the intestines and the cavity of the pelvis. The next organ examined was the bladder. This exhibited a truly singular appearance. Its size was preternaturally large—white and shining in its external coat—and of a texture as hard and firm as the most indurated mammary glands we ever recollected to have seen. An incision was made into the fundus, and extended to within an inch and a half of the urethra. At the fundus, its parietes were *two inches and three eighths of an inch thick*; and at the lower extremity of the incision, *at least two inches*. To form a more accu-

rate idea of this scirrhus mass, its circumference around the fundus was carefully measured, and found to be sixteen and a half inches—its length from the margin of the fundus to the insertion of the urethra, was eleven inches and an eighth. The walls of the bladder had a cartilaginous feel, and were of a whitish and striated colour. The cavity presented a very irregular surface, and appeared as if it had contained clots of grumous blood. Its dimensions were so much reduced, that we are confident it could not contain more than two ounces of fluid at any one time. No calculi were contained in it.

The ureters were preternaturally large, and, like the bladder, had a white shining exterior, with a cartilaginous feel and firmness. The ovaria next came under our notice—and we discovered the right enlarged to the size of a walnut, and in a scirrhus state. The left was natural. The broad ligaments were covered with small tubercles, and were torn in several places. The round ligaments were perfectly natural. The rectum was free from disease. No laceration or rupture of the vagina had happened. As the permission to examine the body only extended to the organs we have described—and as the morbid appearances above mentioned, were fully sufficient to account for the rupture, and also to exonerate from blame every person connected with the case, we did not pursue the dissection any further.

I shall close the history of this unfortunate and afflicting occurrence, with a concise, although an imperfect, account of the causes which, in my opinion, produced the fatal event.

In the month of February, 1816, Mrs. D. was, after a very difficult labour of five days and nights, delivered by the natural powers of her first child. It was very large, and to all appearance had been dead two or three days. A slight attack of puerperal fever supervened, which in a few days yielded to the usual remedies. But she also complained of a violent pain in the region of the bladder, with inability to make water. Opium, anodyne glysters, warm fomentations, and demulcent drinks were prescribed, which miti-

gated the pain, though the inability to make water still continued, and she had to be relieved every few hours by the catheter. Early in March following, enuresis came on, of which, by the aid of the usual remedies, she recovered in about three weeks. The use of the catheter had to be continued till about the middle of April, when her health being *apparently* re-established, further medical attendance became unnecessary. From February, 1816, until June 23d, 1822, she had one miscarriage, and was at different times delivered of three children at the full period, one of whom was still-born. She always had severe and lingering labours.

I think it more than probable that the bladder was injured during the first labour, owing to the child's head being wedged low down in the pelvis, upwards of twenty-four hours previous to delivery. This made it impracticable to introduce the catheter to evacuate its contents, consequently distention took place, occasioning inflammation and thickening of its muscular coat, and which eventuated in scirrhus: and that it being so frequently exposed to injuries during laborious parturition, kept up and increased its diseased condition, which gradually extended to the uterus and the parts connected therewith: and further, that the constant pressure which the uterus sustained between the child and the firm and enlarged bladder, caused absorption of the parietes of that organ—hence, rupture of that viscus took place. I am indeed much astonished, considering its diseased state, that it did not rupture much sooner. The state of the bladder satisfactorily accounts for the unsuccessful attempts to deliver by the forceps and lever. In my opinion, delivery would have been impracticable either by the forceps or turning.

Not the least extraordinary circumstance connected with this case, is, that Mrs. D., since the spring of 1816, made no complaints in regard to the loss of the proper functions of the urinary organs: and from the husband's and mother's account, she enjoyed good health during the whole period of gestation.

On the whole, I am persuaded that, from the nature of the

case, human skill could not have prevented the rupture—or have rendered any efficient relief to the unfortunate woman.

ART. XIV. *Case of Rupture and Inversion of the Uterus of a Cow.* From Godman's Western Quarterly Reporter.

THIS animal, belonging to a respectable gentlemen of Cincinnati, was observed, during parturition, to be in a great deal of distress, by which a considerable number of persons were attracted to discover what would be the result. During a violent effort at expulsion, a noise was heard by the by-standers, which they compared to the sudden rending of a strong cloth, and it was very plainly to be seen, that the calf had escaped into the cavity of the belly. The owner of the animal then proposed to knock her on the head, supposing she would die in a lingering and painful manner. Some one present interfered, and offered to deliver her by bringing the calf through the laceration of the uterus again into the cavity of the organ. Accordingly the hand and arm were introduced until the whole arm, as high as the shoulder, was passed in. After some time spent in searching for the feet, the assistant drew them partly into the uterus, when an effort was made by the cow, which expelled the uterus and the calf at the same time. The uterus was fairly inverted and had a very large rupture extending obliquely across the fundus.

As the uterus had been received on a cloth and was not allowed to come in contact with sand or dirt, an attempt was immediately made to return it by two persons, who gathered it up as closely as possible, though without much attending to the order in which it was to be reduced; after many strenuous attempts they succeeded in returning it. The cow was fed a day or two on thin slop, but in a few days walked to pasture, and is, at this time, (six weeks since the occurrence of the laceration and inversion,) perfectly well, and gives a gallon of milk daily.

REVIEWS.

ART. XV. *On the Uses of the Spleen.* By THOMAS HODGKIN.
The Edinburgh Medical and Surgical Journal, No. LXX. January, 1822.

THIS article, which purports to give a new theory of the *uses of the spleen*, will be read with no ordinary interest on this side of the Atlantic, where the supposed peculiar views it inculcates of the subject, have been long familiarly known. The author maintains an opinion, which he claims as original, that the spleen performs an office in the animal system, similar to that which tubes and valves of safety do in various kinds of chemical and mechanical contrivances—or, like the middle tube of Woulf's apparatus, tending to obviate any inconvenience which might arise from a sudden disturbance of the proportion between the capacity of the vascular system, and the fluids which circulate in it. This is precisely what the late Dr. Rush implies when he compares the spleen to a "waste-gate,"—"a temporary reservoir," or, "bason held by the hand of nature, to receive for a while several pounds of blood,"—in order to preserve the system from disease and death, during the more violent commotions in the circulation. For ourselves, we must acknowledge, that we perused Mr. Hodgkin's paper, in which the name of Rush is not mentioned, with a mixture of surprise and indignation, and felt greatly disposed to expostulate with our transatlantic brethren in general, for this attempt to rob us of the merit arising from our own research, together with many other acts of scientific oppression, with which they stand chargeable. Long accustomed to consider the late Dr. Rush, as the sole author of the ingenious theory sup-

ported by Mr. Hodgkin, justice to the memory of one whose name sheds a lustre over the scientific annals of his country, seemed to call for a vindication of his proper claims. But, the investigation had scarcely commenced, when it was found, that both Dr. Rush and Mr. Hodgkin had been anticipated by the speculations of several English and Dutch anatomists of the last century, as appears from the following extract of a note, subjoined by the editor of an edition of Heister's Anatomy, published in 1752.

"Schelhammer, and with him Lister, and some of the late English anatomists besides, as Purcell, &c. suppose it (the spleen) to be a kind of *diverticulum for the blood, in the more violent commotions.*"

Dr. Rush probably alluded to this passage, in the note which he prefixed to his *Inquiry*, where he says, "since I adopted and taught the use I have assigned the spleen, a former pupil of mine copied from a French edition of one of Heister's works, by Dr. Senac, in the possession of a physician in a neighbouring state, and put into my hands, a short note, in which the doctor glances at the opinion I have delivered, but treats it as chimerical. The peculiar ideas upon that subject, and all others contained in the above inquiry, occurred to me, while I was employed in investigating the causes of the obstructions of the spleen and liver, which take place in madness."

Dr. Rush published his views upon this subject, in the year 1807.* His paper, which was republished in the Journals of Europe, has been referred to by several distinguished medical writers, among whom it may be sufficient to mention, Drs. Armstrong and Parry. Inclined as we are to make every allowance due to Mr. Hodgkin, for his slight acquaintance with the writings of our eminent countryman, it appears like too great an indulgence, to grant a similar

*An Inquiry into the Functions of the spleen, liver, pancreas, and thyroid gland. By Benjamin Rush, M D. Professor of the institutes and practice of medicine, in the University of Pennsylvania.—Coxe's Medical Museum, 1807.

favour to the learned conductors of the Journal which ushered his *new theory* into the world.

If we deprive Dr. Rush of the credit of having first promulgated this theory, we must still regard him as its most able supporter, and as having, by a variety of exceedingly ingenious arguments, and illustrations, placed it upon a foundation little short of originality.

When we contrast the speculations of Mr. Hodgkin, with those of Dr. Rush, we can scarcely withhold the charge of plagiarism from the former—a charge which, however, will not be insisted on. We may nevertheless, be permitted to remark, in relation to this coincidence, that we think it possible to become acquainted with the opinions of eminent men, without ever having seen their writings. It might even so happen, that a person having listened with no particular interest to the opinions of another, may have lost all recollection of them, and their author, until after a lapse of time, they have sprung up in his memory spontaneously, like plants, whose seeds have lain a long time dormant in the earth.

We shall now proceed with as much brevity as possible, to contrast the arguments of Mr. Hodgkin, with those of Dr. Rush. The subject is one of considerable interest, and as there are doubtless many who cannot conveniently procure access to the writings of both, perhaps, no apology will be found requisite for the length of the subsequent extracts.

Dr. Rush commences his inquiry into the functions of the spleen, by delivering the following proposition:

“All the motions which go forward in the human body, are produced by external stimuli. These stimuli direct their influence directly or indirectly upon the blood-vessels. From innumerable causes, they are liable to become excessive in their force. Such is the excess of this force, and such the frequency of its occurrence from exercise, labour, intemperance, passions of the mind and disease, that a provision to defend the tender and vital parts of the body from

the effects of this force, seems to be a necessary appendage to the body. 'This provision is the *spleen*.'

This proposition, which is directly deduced from Dr. Rush's peculiar pathological system, seems indeed, the very key-stone of its structure. The following is a summary of the facts, upon which he founds his opinion.

1st. "The structure of the spleen. It contains but one artery, and that a large one, with veins that ramify through every part of it. This artery is larger than that of the liver, which is four times as large as the spleen. In having but one artery, it differs from those viscera, which have certain offices to perform upon the blood.

"These viscera are the lungs, the liver and the heart, each of which has an artery intended for the exclusive purpose of its nourishment. The spleen having no work to perform upon the blood, and serving no other purpose than a temporary reservoir for it, is nourished by its single artery. It has no excretory duct. Its texture is soft and spongy, and of so distensible a nature, that it will admit of an increase of its weight from blood, to three or four pounds, without the least mark of departure from its natural state in which it contains about a pound of blood. It is from the facility with which it is distended, that it has been compared to the corpora cavernosa penis.

2. "The *situation* of the spleen. It is placed near the heart, the centre and prime mover of inordinate and violent motions in the blood-vessels, and in a part of the belly, in which, from the frequent and lax state of the stomach and bowels, and from the disproportionate space it occupies, to its size, it is capable of more prompt and greater distention, than it could have had in any other part of the body. To enable it always to retain its distensible power, it is never lessened in its size by fat.

3. "The phenomena which take place in several of the common exercises of life. Where is the school-boy who after running for fifteen or twenty minutes, in the ordinary plays of schools, has not felt a pain in the left side? This is sometimes so great as to compel him to sit down half

bent, and even to make him cry out for relief. The name of this pain, I well recollect, indicated its cause. It was the "spleen."* In laughing, the spleen performs the same kind office of opening a waste-gate, for the torrent of blood excited into action, by the violent and excessive agitation of the blood-vessels; hence we so often observe persons in paroxysms of laughter, press upon the left side, to lessen the pain produced by the distention of the spleen, and hence to, the phrase of "splitting the sides with laughing." It is the left side only, that is in danger of bursting, and the spleen only, in this side. When sudden death occurs from laughing, it is probably induced by rupture of the spleen, an accident which has, now and then, dissections teach us, occurred from other causes. The pain in the left side, which is felt in riding a hard-trotting horse, appears, like that which is induced by running, and laughing, to arise wholly from an undue distention of the spleen. In all these cases it performs the office of a basin, held by the hand of nature to receive, for a while, several pounds of blood, in order to preserve the system from disease and death. It is only when the spleen is distended to the extent of its capacity of retaining blood, that it imparts a sense of pain, for I shall say presently, it possesses but little sensibility in proportion to the number of its nerves."

4. "The *quality* of the blood which has been procured from it. It is less coagulable than blood obtained from the arm by bleeding, or discharged from wounds. I have ascribed this to the force with which it is thrown into the spleen, or to the feeble action of the veins, in propelling it back again into the circulation, both of which we know, impair the coagulable quality of the blood. I am aware this quality of the blood is denied by Dr. Saunders, but he opposes to it only a single experiment, made under circum-

* In addition to these observations of Dr. Rush, a fact well known to butchers offers a strong verification of this effect of excessive exercise. In those animals which have been slaughtered immediately after a long journey, it is invariably found distended beyond its natural dimensions.

stances which do not contradict the numerous experiments of several other equally respectable physiologists."

5. "The nature of the diseases which produce obstructions in the spleen. These are fevers of all kinds. The excitement of the blood-vessels by the undue exercises of the faculties of the mind, produces the same morbid affections of the spleen. It has been remarked, that in persons who die suddenly, the spleen is found to be of its natural size. The sudden destruction of the excitement of the blood-vessels in these cases, does not give the spleen time enough to open its friendly door, to receive the excess of the stimulus which thus destroys life, by abstracting from them for a while three or four pounds of blood."

6. "The disease which most commonly follows an enlarged or obstructed spleen, and that is hemorrhage. Hippocrates long ago ascribed a bleeding from the nose, to an obstruction of the spleen. Van Swieten says, he once attended a patient, in whom an uneasiness and tension of the spleen enabled him to predict a return of the same disease.

7thly and lastly. "The diseases which follow the loss of the spleen, whether by accident or design, in men, and other animals. These are an enlargement of the liver, flatulency, indigestion, headach, and an increased secretion of saliva, urine and semen.

"I might here take notice of the existence of a spleen in all classes of animals, as a proof of its being intended for the purpose I have mentioned. I might also point out the difference of the spleen in the human species, from that of brutes, consisting chiefly in a texture calculated to afford more promptly and freely, a receptacle for the blood, when excited into tumultuous motions; but this would lead me from the subject of the present inquiry. I have supposed this difference, so favourable to the quick distention and capacity of the spleen in the human species, to have been necessary, in consequence of our blood-vessels being more exposed to excessive motions, than those of inferior animals, through the medium of our greater portion of mind."

We shall now proceed to confront the arguments of Mr. Hodgkin with the preceding. His first reason is derived from the structure of the spleen.

“The cells of this organ appear admirably calculated to admit, with impunity, of a protracted congestion of blood in them, which in other parts, would necessarily be followed by consequences of the worst nature. On the one hand, these cells are sufficiently minute, to bring the blood so much into contact with the solid vital parts, as to remove every danger of coagulation which takes place when blood escapes from its vessels; and, on the other hand, those changes are not likely to be effected in it, at least, with the usual rapidity which takes place when the blood enters the ordinary minute terminations of vessels.”

2. The situation of the spleen. “I have already said, that it seems improbable that it can receive from the stomach that degree of pressure which, according to the theory of Dr. Haighton, it is necessary it should do; and here I may add, that it appears highly probable that the spleen is placed in contact with the stomach, for this very reason; that, of all the viscera of the abdomen, the stomach is the least likely to interfere with the variations of its dimensions, as well as for the sake of the protection which, in this situation, it receives from the ribs.

“Not less consistent with this idea of the functions of the spleen, is its connexion with all the viscera of the abdomen, through the medium of the vena portæ, which, probably, on this account chiefly, has not been furnished with valves.

3. “The great variety which is met with as to the size of the spleen, has, I believe, been long observed, and has tended to add to the perplexity in which the function of this organ has been involved. In persons who have died suffocated, I have found the spleen large and turgid; but, in a man who died from the bursting of a large aneurism, which extended from the origin of the cœliac artery quite into the pelvis, the spleen was small and flaccid. Should such coincidence not be found to exist in all cases of death from similar causes, this circumstance, alone, will not amount to

a refutation of my opinion; for we cannot but suppose, that in different individuals during life, this function of the spleen must be more or less forcibly and extensively called into action, by which the growth of the organ must be affected to a degree which the circumstances occurring at death cannot, in every instance, be able to countervail."

In the fourth place, Mr. Hodgkin proceeds to mention some pathological facts in support of his opinion. "First, as to the causes which tend to produce disease of this viscus. Of these, none is more remarkable, and at the same time of more frequent occurrence, than intermittent fever.

"In the cold stage of an intermittent, when the vessels of the surface are often suddenly diminished in capacity, and when, consequently, a large quantity of blood must be as suddenly thrown upon internal parts, an organ acting the part which I have here attributed to the spleen, must be called into unusually active service, at a time when the febrile state checks those secretions by which it is to be itself relieved, and the balance between the circulating fluid and its vessels is to be preserved. What else could we expect of an organ frequently called into excessive service of this kind, but first increased growth, and afterwards, should the cause continue to operate, derangement of structure? Those who die of ague are, it is well known, almost invariably cut off in the cold stage, and the spleen is either found prodigiously gorged with blood, or actually ruptured. More frequently, however, the complaint being less urgent, proceeds to the derangement of the spleen.

"Another complaint which leads to the derangement of the spleen, is amenorrhœa; and the mode in which it acts, admits, I apprehend, of as easy an explanation as the preceding case, provided the functions which I have supposed be attributed to the spleen.

"Secondly, A very few words will suffice with regard to the effects produced by the structure of the spleen becoming so far deranged, as to disable it from fulfilling its function. Either hemorrhage or serous effusion is, I believe, the almost invariable consequence induced, as I conceive, by the

small vessels being unable to sustain the shock occasioned by a sudden disturbance of the balance, between the capacity of the vascular system, and the circulating fluids ; which shock, in the healthy state of the spleen, is in a great degree broken by it, assisted, no doubt, by the elasticity of the vessels, which have not been exposed to the constricting cause."

Of the experiments cited by Mr. Hodgkin, the following one from Mr. Brodie, seems to have most bearing upon the present inquiry, although not made with direct reference to the subject of investigation.

"The vena portæ of a dog was obstructed by a ligature, just as it enters the liver. After some hours uneasiness, the animal died ; and on examination, the abdominal viscera, as we must conceive would necessarily have been the case, were found charged with venous blood. This, however, was remarkably the case with the spleen, which was gorged with blood, and prodigiously distended. Here," says Mr. Hodgkin, "the spleen appears to have performed its part to the utmost ; but the relief which it in its turn requires, being cut off by the ligature on the vena portæ, no exertion of its function, however considerable, could preserve life."

As we consider original experiments, as the most useful and welcome data, we shall now subjoin the only one made by Mr. Hodgkin. It will be found to require no apology for its length.

"In the 8th month (August,) last, after dividing the spinal marrow of a cat, I opened her abdomen, and immediately immersed her in cold water, taking care not to admit the water into contact with the viscera of the abdomen. The spleen became sensibly turgid. This seems to prove, as far as the result of our experiment can do so, that the spleen is, in the mode I have hinted at, subservient not merely to the vessels of the abdomen, but to those of the system generally. The derangement produced in this viscus, by intermittent fever, tends to the same conclusion."

Sensible himself of the poverty of this solitary experiment, Mr. H. apologises for not having made more. He thought that by availing himself of the experiments of men of the

highest standing, no imputation could arise, of having warped facts to suit his own views, which he conceives the theorist may sometimes do with the most innocent intentions. To this argument we cannot, however, yield our assent, since almost every work written upon subjects connected with our profession, afford proofs to the contrary. The skill displayed by authors in adapting the facts and observations of others to their own doctrines, is indeed, proverbial, of which the subject of this article will alone afford ample illustration. The ingenuity thus exhibited, reminds us of the usage of the Chinese philosophers, who, having been taught by the writings of their great Confucius, to consider the form of the earth a square, display wonderful dexterity in their attempts to accommodate the more correct geographical views of modern times, to the immutable text of their venerable oracle. When obscure subjects are left to hypothesis for solution, the conclusions formed are usually vague, and often extravagant. This observation will be found strikingly exemplified, in the discussion relative to the uses of the spleen, for perhaps, no other occasion has given rise to a greater diversity of opinion. The philosophical mind scorns to leave any region unexplored, and when retarded by obstacles, wearies itself to overcome them.

At an early period in the history of our science, Erasistratus viewed the spleen as a superfluous appendage to the human frame. He may therefore be considered as holding one extreme, whilst we find the other supported by those physiologists, who have regarded its presence as not only useful, but indispensable to healthy existence. According to one theory, the spleen attenuated the thick blood, out of which the bile was secreted, and thus obviated those obstructions which might otherwise happen; whilst another made it perform the very opposite office of inspissating the blood. Hippocrates and Aristotle, believed that it served to draw off from the stomach, the watery matter and vapours. But by far the most popular theory of antiquity, was that of Galen, who considered this viscus as the recep-

tacle of the humour they called *atra bilis*, or melancholy. Equally absurd, is the hypothesis formerly entertained, that it was the seat of laughter, according to the Latin adage :

Splen ridere faciat, cogit amare hepar.

Among modern doctrines, those of Hewson and Haigh-ton have had the greatest celebrity. The former ascribed to the spleen, the office of manufacturing the red globules of blood ; whilst the latter considered it subservient to the process of digestion, by furnishing an increased supply of the gastric and pancreatic fluids, at a time when they are most needed.

These are but a few of the many hypotheses propagated at various periods, a more particular detail of which, could be of little further use, than to show how apt we are to lose ourselves in the dark and intricate mazes of error, when undirected by the light of demonstration.

As a sequel to our subject, we shall now advert to some researches made by several highly ingenious and eminent physiologists of our own day. Whilst at the head of the list, we place the indefatigable Sir Everard Home, we are compelled to avow, that his conclusions are to us by no means decisive. It may not be superfluous to observe, *en passant*, that he has renounced the theory which he advanced in 1807, when he considered the spleen as subservient to the stomach, from which the redundant fluids could pass, by a direct communication. His present inferences, though drawn from the most accurate experiments, and microscopical examinations, are, however, still extremely vague and unsatisfactory. In his last investigations, his attention has been chiefly devoted to the minute structure of the spleen, and the following is the result of his inquiries.

That the spleen “ consists of blood-vessels, between which, there is no cellular membrane ; and the interstices are filled with serum, and the colouring matter of the blood from the lateral orifices in the veins, when these vessels are in a distended state ; which serum is afterwards removed, by the numberless absorbents belonging to the organ, and

carried into the thoracic duct, by a very large absorbent trunk."

"That all the apparent fibres are vascular," continues he, "is proved by the representation in plate iii. fig. 1, in which they are minutely injected, and the injection is carried into the cells, and moulded into their form. The lymph globules carry along with them, into the interstices, carbonic acid gas, and the mucus soluble in water, in great abundance; but no blood globules, since none are formed in the cells. As soon as the lymph is at rest, the carbonic acid gas being let loose, forms the cells that surround the lymph globules, the sides of which are held together by the mucus, putting on the appearance of corpuscles, without colour, and are thus mistaken for glands. The gas is absorbed by the blood in the arteries and veins."

"The spleen, from this mechanism, appears to be a reservoir for the superabundant serum, lymph globules, soluble mucus, and colouring matter, carried into the circulation immediately after the process of digestion is completed."

We here see that Mr. Home considers the substance of the spleen as completely vascular, without the interposition of any cellular membrane between the blood-vessels. Yet, in the midst of his explanations, we find him speaking of the matter of injection "passing into the cells," and being moulded into their form, denying at the same time the existence of blood-globules in the interstices, "since none are formed in the cells." Surely there must be some misapprehension in this explanation. At all events, we confess our inability to understand it, and without further comment, which might only serve to perplex still more an intricate subject, we proceed to notice the opinions of the German professors Tiedemann and Gmelin.*

These physiologists, like Sir Everard Home, have been induced to investigate the uses of the spleen in connexion

* For a very good exposition of the new doctrines relative to the *cellular tissue*, we refer the reader to a highly interesting "Review of Bichat's General Anatomy, by M. Beclard," in the Edinburgh Medical and Surgical Review, for April, 1822.

with the subject of absorption. They appear to have placed little stress upon the minute structure of the organ, and have for the most part drawn their inferences from the qualities and changes of the chyle and blood. Their conclusions are concentrated under the following heads.

1st. "The spleen is an organ closely connected with the lymphatic or absorbent system.

2d. "In it a coagulating fluid is secreted from the arterial blood, which is taken up by the absorbents, and carried into the thoracic duct.

3d. "This secreted fluid when poured into the thoracic duct, is intended to make the chyle resemble the mass of blood."

They infer from many interesting facts, that there is a connexion between the splenic arteries and absorbents, both directly through the finer arterial branches, and indirectly through the medium of cells, in which cells the fluid may be secreted and taken up by the arteries. The secretion from the arterial blood consists of a reddish coagulating lymph which, they remark, was observed by Hewson in the lymphatics of the spleen. They consider the plentiful secretion of this fluid as accounting satisfactorily for the very abundant provision of blood supplied by the large splenic artery. The nervous influence is derived from the system of the ganglions, and the function is most active during the process of digestion.

In support of the third conclusion, that this peculiar secretion of coagulable lymph when mixed with the chyle in the thoracic duct, imparts to it the properties of blood, they adduce the following observations. From the testimony of many chemists and physiologists, the chyle of the intestinal chyloferous vessels which has not passed through the mesenteric glands, is very different from that found above those glands and in the thoracic duct. The conversion of chyle into blood is gradual, and takes place in consequence of its passage through the mesenteric glands, and its subse-

quent mixture with the reddish coagulable lymph supplied by the absorbents of the spleen.

To prove in the most direct manner that this splenic fluid has the influence upon the chyle which they ascribe to it, our enterprising experimentalists extracted the spleen from a living dog. In eighteen days the animal had recovered from his wound, and except a little emaciation appeared nearly as well as before the operation. His appetite and digestion had become natural. The dog was now killed by strangulation, having been fed previously with bread and milk, to which two drachms of prussiate of potass were added, a combination which he devoured greedily. The chest was immediately opened, and the thoracic duct secured by a ligature. It was found to contain a clear, whitish and thin chyle, which when cool produced a remarkably small portion of crassamentum that floated in a large proportion of serum. After long exposure to the action of the air, it acquired a pale reddish colour. On adding to the serum a few drops of the muriate of iron, a pale greenish blue colour was produced, which was probably occasioned by the presence of prussiate of potass. In the abdomen, the omentum was found adhering to the muscular peritoneum, where the wound was made through which the spleen had been extracted. The liver was full of blood, and appeared somewhat enlarged. The gall-bladder was filled with bile of a natural taste, colour and consistency. Some prussiate of potass was detected in it also. The serum of the blood drawn from the vena portæ, was coloured blue by the addition of muriate of iron. Prussiate of potass was found in the whole extent of the intestinal tube.

The lymphatic glands of the abdomen were unusually large, and full of blood. The absorbent glands in the region of the lumbar vertebræ and the pelvis, were evidently increased in size. Finally, it deserves to be mentioned that in the uterine extremity of the fallopian tubes, five embryos were found, which might be about four or five weeks old.

After a long detail relative to the effects of this operation

upon the functions of other organs, they observe, that the chyle in the thoracic duct appearing so uncommonly thin and white, and containing so small a quantity of crassamentum or coagulable matter, seemed to confirm them in their opinion, that in the spleen a red coagulable lymph is secreted from the arterial blood, and from thence conducted into the thoracic duct, to assist in converting the chyle into blood. The watery nature of the chyle in this experiment, and the small proportion of crassamentum it afforded, they attribute to the removal of the spleen.

We have been the more particular in relating this experiment, because it will be found to embrace nearly all the principal facts and inferences of the German physiologists. Their views, if not regarded as perfectly satisfactory, must be considered as sufficiently explicit, and in this respect at least, have greatly the advantage over those of Sir Everard Home.

Whilst our attention was still fixed by Mr. Home upon the minute structure of the spleen, we might have introduced with more propriety the opinions of the French physiologist Beclard, who has devoted much attention to the anatomical nature of the spleen.

The result of M. Beclard's investigation is, that the structure of the spleen may be referred to that peculiar arrangement of arteries and veins which he has denominated, after Richerand and Dupuytren, the *erectile tissue*, a spongy texture peculiar to the corpus cavernosum penis, and corpus spongiosum urethræ, as well as to the female nipple and clitoris. He considers the old theory of the cellular nature of the cavernous structure as proved erroneous by the late researches of several Italian, French, and German physiologists, by whom the arteries of this structure when injected, were perceived to terminate in very fine ramifications precisely as in other parts. But when the veins are injected, a very different arrangement is discovered, for they are seen to be dilated at their origin, with their *radiculæ* much larger than could be expected from the ordinary cha-

racteristics of these vessels. The vascular dilatations to which they are accessory, anastomose freely, just as they do in the capillary system of which they are a part. This arrangement gives to these vessels the appearance of having been punctured with sieve-like openings resembling areolæ, or meshes, mutually communicating. The whole difference therefore, between the capillary vessels of this and other parts, consists in the venous *radiculæ*, which being dilated in a peculiar manner, induces M. Beclard to conclude, that the erectile tissue of the cavernous body consists simply of minute arteries and dilatable veins interwoven in the manner of capillary nets.

It should be observed that these conclusions relative to the arrangement of the erectile tissue, are drawn almost entirely from observations made upon the cavernous body of the penis, and that they tend to explode the long established opinion which ascribed the erection of the penis to pressure upon the pudical veins.

M. Beclard thinks the spleen similar to the cavernous body in every respect, and like it subject to a species of erection in which it exhibits an actual motion of expansion and contraction. The following experiments and circumstances are adduced in support of his views. 1st. When in a living animal the course of the blood in the splenic vein is arrested, the spleen swells, but resumes again its natural size as soon as the circulation is restored. 2d. In diseases; the paroxysms of an intermittent are accompanied with an obvious enlargement of this organ, which subsides when the paroxysm is over. 3d. It appears that the same phenomenon takes place during digestion.

Having, as we think, fully established the claims of Dr. Rush, so far at least as relates to Mr. Hodgkin's encroachments, and given as explicit a sketch as possible of the interesting experiments and observations of recent investigators, we hasten to conclude our task. Notwithstanding the very ingenious and plausible conclusions already formed, we regard the question in its present situation, as by no means at rest, and cannot avoid expressing a hope we

cherish, that the ardour and patient scrutiny displayed by several members of our domestic circle, may, in time, be successful in shedding additional light upon this obscure and highly interesting subject. E.

[The above Review has been contributed by a correspondent, to whom we are already under great obligations.—EDITOR.]

ART. XVI. *Réflexions Médicales sur la Maladié Spasmodico-Lipyrienne des Pays Chauds, vulgairement appelée Fievre Jaune.* Par J. L. CHABERT, D. M. M., &c. Nouvelle Orléans, 1821.

TO present our readers with an analysis of a book on yellow fever, would almost seem to render some apology necessary. Medical literature, and ours particularly, abounds with papers, observations, and more formal treatises, from which an inquiring mind may with facility collect much information on all points touching the disease. Nevertheless, as it is a subject of immense importance to every American physician, owing to its frequent occurrence in several of our cities, we have been led to think, that some remarks on the above work cannot wholly prove unacceptable, especially as it treats of the fever as it appeared in a section of our country, where hitherto it has not been so well described.

Before we proceed to an examination of the opinions advanced by our author, on the causes and nature of yellow fever, we cannot hesitate expressing our entire disapprobation at the new name by which he has thought fit to designate it. Distinct from the confusion created by the introduction of new titles in such a case, it strikes us as evident that our author in denominating *spasmodico-leipyrrian* what we have been accustomed to recognize under the simple appellation of yellow fever, has been actuated by a theory, which, however to him it may appear plausible, will, we feel confident, be considered otherwise by the greater number of practical physicians. It will be sufficient for us, at

present, to state, that he uses the term *spasmodic* from his believing the first stage of the disease to present nothing but a spasm of the muscles and organs, obedient directly or sympathetically to the impulse of volition. The second term he derives from *leipyria*, which was employed by Hippocrates and Galen to designate a fever accompanied with inflammation of an internal organ, and in which the interior of the body is of a burning heat, while the extremities are cold.

The cause of yellow fever—the *modus operandi* of this cause on the animal economy—the modifications which are wrought in the living system during the several stages of the disease—and the organs, to whose lesions we are to refer the various symptoms observed during life, with the morbid alterations discovered on dissection, are the questions which seem to our author indispensably necessary to be elucidated, in order that we should arrive at the proper plan of treating this *proteiform* disease. Each of these points we shall successively take up, in connexion with the various arguments he has adduced, in support of his theory.

The Cause of Yellow Fever.—This is a subject, to the investigation of which our author has devoted no small share of attention. Discarding, as have also the greater number of the enlightened physicians of this country, the opinion of its contagiousness, he inquires particularly into the real degree of power possessed by intense heat in humid situations, and by marsh miasmata, in the production of the fever under consideration. That it depends exclusively on intense atmospherical heat, united with great dampness, is an opinion advanced by many writers of no little respectability, and which, in latter times, has received the sanction of the celebrated Italian pathologist Tommasini, in his work on the yellow fever of Leghorn—as well as of the authors of the report made to the Medical Society of New Orleans, on the epidemic of 1819. In their article on yellow fever, contained in the *Dictionnaire des Sciences Medicales*, Fournier and Vaidy on the contrary, supported by the testimony

of many writers on the subject, seem inclined to consider the disease as proceeding from marsh miasmata, which they believe acquires additional energy from the too close confinement of a great number of individuals. But our author, in opposition to this, maintains, that in no instance can this malady arise without the united powers of all the above-mentioned causes: or, in other words, that "it is the result of the simultaneous action of the effluvia from marshes, and of emanations from the bodies of men inclosed within a city, camp, vessel, &c.": and also, that "these causes are modified and rendered more active by excessive heat."

The principal arguments brought forward to show that marsh miasmata, properly so called, are alone insufficient to produce the yellow fever, are deduced from the remarks formerly made by Lancini and Zimmerman, that these effluvia excite exclusively paroxysmal fevers, which, according to our author, should be regarded as differing widely from the *spasmodico-leipyrian*—and further, from the assertion of Torti and Alibert, that malignant intermittents, unless arrested in their progress by a skilful administration of Peruvian bark, terminate fatally. He, hence, labours hard to prove these to be different diseases from the yellow fever, and to demonstrate the error committed by Dalmas in confounding them, and extolling the virtues of the bark in all such cases. As additional evidence of the correctness of his views, he alleges that the yellow fever never extends beyond the limits of a city—and that in the state of Louisiana, more especially those places out of New Orleans, which are surrounded by marshes, and of course subject to intermittent fever, are entirely exempt from the disease—which would not be so, did this latter owe its origin simply to marsh effluvia.

This reasoning cannot, we feel persuaded, appear to our readers in any other light than as lame and defective. Without entering into any formal refutation of it, we shall merely remark, that it is a fact, the truth of which is sufficiently established to render unnecessary any further support, that from miasmatic exhalations proceed the various

grades of gastric fever, from the simple intermittent, to the complicated *remittent*, and *continued* bilious—the difference depending on the degree of concentration in the cause, and on the difference of predisposition in various individuals. It has been observed by various writers, that cases of yellow fever occasionally occur, of decidedly the intermittent type, and are sometimes arrested in their progress by bark, &c. The genuine yellow fever has been moreover known to occur in the country, remote from a city, and under circumstances which rendered it impossible to trace it to importation, or any other cause excepting marsh effluvia. These few observations will, we think, serve to show, that the sweeping generalization of our author, notwithstanding the respectability of the names he has brought forward in its support, is wholly untenable. Yet, we will concede to him the correctness of the opinion, that, *most generally*, marsh miasmata *alone* are not sufficient to generate yellow fever. The principal reason which seems to have induced our author to reject great atmospherical heat and dampness, as the sole causes of the disease, is the limited space it generally occupies—since, did the fever, says he, arise from such a source, would it not effect a greater extent of country?

Though it is evident to us, that in a majority of instances, something must be superadded to the above causes, to render them adequate to the production of the disease, we must still confess our entire doubts, that the “effluvia or miasmata arising from man, and from his alvine discharges—those that arise from animal substances, in a state of putrefaction alone, or in combination with the effluvia or gases issuing from marshes, are the *natural* cause of yellow fever.” Nor does it appear to us that our author has advanced any argument or fact, to substantiate such an hypothesis. That to this cause, camp, jail, ship and hospital fevers are to be referred, no one at the present period, will attempt to deny. Nor shall we contradict the fact, that its occurrence may, and has in more instances than one, contributed to render the yellow fever more extensive in its prevalence, and per-

haps more fatal in its character. But in all such instances, it acts by rendering the real cause of the fever more intense.

After noticing the fact, that from human effluvia, whether from healthy or diseased individuals, typhous fever arises in Europe, he goes on to say, "and if the same results are not observed to occur under the tropics, in Louisiana, and in many other of the American States, it is owing to the intensity of the heat, which modifies this cause, renders it more energetic, and perhaps, likewise occasions it to enter into new combinations, by which its nature is changed, and its mode of operation on the animal economy modified." From these, and some succeeding remarks, which we are obliged to omit, we are led to the conclusion, that in the opinion of our author the same causes, which in Europe produce typhous, can, when modified by intense heat, occasion yellow fever. It would, we are confident, be a matter of no great difficulty, to prove by a formal examination, the incorrectness of this hypothesis. But it may suffice to state, that in this city we have seen typhous fever prevail during several succeeding winters, among the poorer classes of our inhabitants—and likewise witnessed the fact, that in those places most severely ravaged by the disease, the warm weather has caused a fever, fatal in its character, but differing from the genuine yellow fever, and which from its prevailing more particularly among the blacks, has received the appellation of *black fever*. Now, were the cause of typhus sufficient, when modified by high atmospherical heat, to produce yellow fever, this latter should reign in summer in those places where the former prevails during the winter months. But such is not the case. In the summer of 1820, for example, we had the black fever extensively in the filthy alleys of our city, whilst the true yellow fever pervades the streets bordering on the river.

That marsh miasmata exert *some* influence in the production of the disease under review, and that the combination with human exhalations is necessary, he infers from the fact, that in New Orleans, the fever never makes its ap-

pearance, except during the prevalence of the north wind, which passing over an extent of marshy grounds, reaches the city impregnated with such deleterious effluvia, and these meeting with the cause already adverted to, enter into a combination with it, and thus contribute to engender the disease. That the yellow fever in all instances derives its origin from a *local* source of infection, is an opinion we have, for a number of years, entertained, and which the progress of our study of the subject has only served to confirm. But that in all cases it can be traced to a combination of marsh and human effluvia, is a notion, the correctness of which, we think, it would be difficult to confirm. The fact of its arising in places remote from such a combination, as on board of ships, cannot in any way be explained on these principles.

Nor could we on this hypothesis account for the continuance of the cause of the fever, after the removal of all the inhabitants from an infected district. Yet, it is a fact sufficiently authenticated, that persons allured by mere curiosity, or called by their duty, to the spot after barricades had been erected, have taken the disease and died. Where in such instances were the human effluvia? The local source of infection still existed, and until annihilated by the effects of frost, was of itself adequate to the production of the fever. Within a few years past, several of our cities have presented such instances of local infection, and on no other principle can we account for the fatal ravages lately committed by this terrible malady on board of the United States frigate *Macedonian*.

We pass from the consideration of the cause of yellow fever, the nature of which it appears has not received from the labours of our author any great degree of elucidation, to notice his remarks on its mode of operation, on the animal economy. "The cause of yellow fever," he says, "appears to us to act as a real poison—to produce its primary action on the nervous system, and after concentrating itself on the brain, to be reflected on the voluntary muscles, of which it raises the vitality—next on the mucous membrane

of the stomach, and intestines, which it irritates, and lastly, on the pulmonary organs, and the general circulation, which though at first excited, we soon experience in the sedative effect of the remote cause a depression which continually increases."

To the excitement of the nervous system, he consequently attributes the febrile reaction, and the general erethismus observed in the commencement of an attack—this latter being thrown on the muscles, causes in them an artificial strength, which some individuals retain to the last moments of existence. To this excitement, also, he imputes the pain which patients refer to the head, stomach, and back—the change in the functions of various organs—the constipation in the first stage of the disease, &c. &c.

The irritation of the mucous membrane of the alimentary canal, causes the inflammation—black vomit, and hemorrhages. This inflammation is in a direct ratio to the increase of the vitality in these membranes—and this vitality being relative, increases in proportion as the calm of the general circulation becomes more apparent, and the pulse slower and weaker.

To the irritation of the pulmonary organs, he attributes the sensation of pain and heat, manifested in the thoracic cavity. The cessation of these symptoms, the slowness of the circulation, the progressive, and sometimes rapid depression of the pulse, a disposition to coldness of the surface, are caused in a great measure, by the deleterious action of the miasmata, the secondary sedative effect of which produces a state of atony in the pulmonary organs, which by rendering respiration incomplete, the black blood is deprived of part of the oxygen necessary to convert it into red—and hence, a feeble degree of heat, and an imperfect vitality.

The yellow fever, according to our author, presents three distinct stages. The first he denominates *spasmodic*, the symptoms here showing general excitement and spasm, which, says he, have been confounded with an inflammatory condition of the system, of which there exists no proof, during life, nor after death. To this state of *spasm* he attributes the

pain in the stomach, back and head—the vomiting and constipation—the increased energy in the muscles—the fixed state of the eye—the pain in the orbit—the suppression of urine, and the yellowness of the skin—all which, he infers from the *fact* that until the third day of the disease, to which he limits the duration of the first stage, no traces of inflammation are met with on dissection.

The nervo-muscular system, exhausted by the excess of pain, is finally compelled to a necessary state of repose. This state indicates the coming on of the second stage of the disease, which he denominates *inflammatory*, because at this period, according to him, the vitality of the mucous membranes of the digestive tubes, and that of their capillary vessels, begins to predominate. This stage is characterized by a remarkable diminution of all symptoms—during which calm, he believes that the increased irritability of the muscular system being blunted, the deleterious miasmata act more powerfully on the capillaries of the mucous membranes, the irritation of which, after having remained in a state of complete inaction (by the effect of that law of the economy, *dolor gravior obscurat minorem*) is now developed, and advances rapidly towards inflammation.

The redevelopment of nervous irritation, announced by a return of some of the symptoms already enumerated as constituting the first stage of the disease, indicates the third period, which by him is denominated *spasmodico-inflammatory*. In this stage, the spasmodic symptoms are united with those manifesting inflammation of the stomach: “And as local phlegmasiæ are aggravated by general debility—and as from a deficient reaction there results a consumption of the vital properties in those parts in which they are accumulated, the inflammation advances rapidly to a state of gangrene, of which we discover evident traces after death, if they have not been made manifest during the last moments of the disease.”

We have thus given, nearly in his own words, the views entertained by our author of the yellow fever, and could, we think, by entering into a minute examination of them,

demonstrate their erroneousness, and the wide difference which exists between them, and the principles of modern and improved pathology. But such details on a subject that has so much occupied the attention of our readers, even to the exhaustion of their patience, would, in all probability, be considered of no practical utility, and hence very badly received. We cannot, however, pass it by, without indulging in a few remarks. The practice of theorising on the essence or proximate causes of disease, giving vent on such occasions, to all the vagaries of the imagination, is one of so general a nature, that our endeavours to point out its uselessness, and, in many instances, mischievous tendency, would, most likely, prove as abortive as those of our predecessors. It is, indeed, a course to which the mind so naturally inclines, that he who raises his voice in opposition to theoretical subtleties involuntarily falls, himself, into the dangers which he wishes to resist. We have, consequently, during the whole of our medical career, examined theories with the eye of impartiality—admired some for their ingenuity—condemned others for their coarseness and great deviation from the path of common sense—whilst some we have applauded for their apparent plausibility, or in other words, as best suited to the views of disease we had imbibed. We have regarded them, therefore, in their true light, namely, as theories, and, in this respect, deserving little of our attention. When, however, speculations are advanced which must infallibly lead, if adopted, to an erroneous and dangerous practice, then we think it our duty to oppose them, and to point out the injury likely to accrue from their general diffusion.

An instance of this kind is, we believe, presented in the *spasmodic* theory of our author, which, to say the least of it, is fanciful in the extreme, and unsupported by the least shadow of sound reasoning. The state of *spasm*, which, according to him, constitutes the first stage of the malady, is not proved to exist, since all the symptoms which it exhibits can be, and are, much more rationally explained on other principles. Let us suppose, for example, the poison causing

the disease, to act primarily on the mucous surfaces of the stomach and intestines, and at the same time advert to the innumerable sympathies of these organs, with the various tissues on the body, as has been so well illustrated in the physiological school of Broussais, we shall be enabled much more satisfactorily to account for all the symptoms, and in a manner that cannot fail to lead to the proper method of treating the disease. To maintain, as has been done by our author, that the stomach is not irritated in the commencement of the disease, merely because the tongue, which in general may be regarded as an index to the state of that viscus, remains clean and moist, and free from coating, is betraying, we think, very imperfect acquaintance with the diagnosis of that organ. Though not always coated from the commencement, we shall find it trembling and red on the edges and end, which appearances, experience has taught to be among the surest signs of irritation of the digestive tube.

Again, it is asserted, that we should refer all the symptoms of the first stage to *spasm*, because those who die before the third day (at which period the excitement of the nervous system gives way to the irritation of the capillary vessels of the mucous tissue of the digestive tube) do not usually exhibit any sign of inflammation. We are prepared to admit, that in many instances of the disease, death can and does take place without a necessary supervention of inflammation of the stomach and intestines. But we are still of opinion, that he has not afforded us any proof of the non-existence of *irritation* of these organs previous to the third day of the attack, nor shown that the vomiting should be attributed to spasm and not irritation. It might perhaps be proper, in this place, to endeavour to ascertain whether our author really understands the true meaning of the words irritation and inflammation as now received, or whether, indeed, he recognize any difference between them. His attributing the vomiting and other symptoms of the first stage to a spasmodic state of the system generally, merely because redness of the stomach is not detected after death, plainly

indicates that he rejects the existence of a *local* irritation, because *inflammation* is not manifest, and thus regards them as synonymous terms. We, on the contrary, maintain that the difference is evident, and must be acknowledged by all who have attended to the phenomena of disease. Any substance applied to a part of the body endowed with nerves, and which, from its nature, is susceptible of a stimulating action, produces in the nerves a state of uneasiness and pain, which is called irritation. In some individuals this morbid state may continue a long time, while in a great majority of others the excitement is communicated to the capillary vessels surrounded by the irritated nerves—an increased flow of blood is thereby drawn into them, and we have the phenomena of inflammation of the red vessels—or, to use the words of M. Broussais, “when irritation accumulates blood in a tissue, with a swelling, redness and heat, capable of disorganizing the irritated parts, it receives the name of inflammation.” By irritation, consequently, we understand simply an increased excitement in the nerves of any part, whilst by inflammation we wish to be understood to mean an increased excitement in the capillary system of the part. Irritation, therefore, may exist without inflammation, but the latter cannot without the former; or, in the language of Bichat, the penetration of the blood into the capillary system, is a secondary effect in inflammation: the principal phenomenon, that from which all the others arise, is the irritation which has changed the organic sensibility, or in other words, the mode of action of the vessels in which it is situated. The absence of *pain* in some instances of inflammation, and more especially in the chronic form, cannot be alleged against the correctness of this assertion, since the *organic* sensibility of a tissue may be increased, without communicating to the sensorium that sensation we denominate pain.

Broussais has been accused by many of his opponents with confounding the two terms, and thus occasioning the introduction of much confusion in his writings. To us the accusation appears unfounded, and indicative of little attention in his readers, or, perhaps, of insufficient know-

ledge of the French language. To this conclusion we have been led by an attentive and *impartial* study of his works.

Having thus established the distinction between irritation and inflammation, we are prepared to meet the objection to our doctrine, above noticed. Irritation of the stomach may kill, without producing inflammation of that organ, as is exemplified in those cases of death from worms or acrid poisons, in which no redness of the vessels has been revealed upon examination. No one, surely, will attempt to deny, in such cases, the existence of irritation, or refuse to refer death to this cause. This we maintain to be the fact, in those instances of yellow fever, in which death taking place before the third day present no traces of inflammation. Nor are we, from the mere circumstance of finding no redness of the internal coat of the stomach, authorized to conclude, that inflammation did not exist, and was not the cause of the fatal termination of the disease.

By those aware of the uncertainty of the ordinary results of *post mortem* examinations, such an objection cannot be viewed as at all conclusive. Cases are recorded by Morgagni, of persons who had died with decided symptoms of pleurisy and apoplexy, that, on dissection, presented no traces of inflammation or congestion—and the immortal author of the *Anatomie Generale* has expressed himself on this subject in the following terms: “We should not estimate the quantity of blood which penetrated the peritoneum or pleura, by that observed twenty-four hours after death. The local irritation was the permanent cause which detained the blood in those parts: this cause having subsided, the blood in a great measure escapes. A serous membrane may have been highly inflamed during life, and present after death an appearance almost natural: the like is seen in erysipelas. I could have been tempted to pronounce, on dissection, the non-existence of a disease which had really existed. The same remark is applicable to the cellular tissue, to the inflamed mucous surfaces, &c.—Behold a subject dead with angina, which, during life, had presented a deep redness of the velum palati, and of the whole pharynx—when, after

death, those parts have almost resumed their natural colour."

The supposition of the principal effects of the cause being on the brain and nervous system, and from thence reflected on the other systems of the animal economy, is altogether gratuitous, since in a great proportion of cases of the disease, and unless the patient presents evident signs of the nervous temperament, these organs are so little affected as to deserve no very great degree of attention. The intellectual faculties, so far from being deranged, remain on the contrary unimpaired to the last moment—and we discover few or none of those symptoms which we are accustomed to regard as depending on the participation of the nervous system with the morbid irritation. In his account of the fever which prevailed in this city in 1793, Dr. Rush tells us—"I was surprised to observe the last stage of the fever exhibit so few of the symptoms of common typhus or chronic fever. Tremors of the limbs and twitchings of the tendons were uncommon. They occurred only in those cases in which there was a predisposition to nervous diseases, and chiefly in the convalescent state of the disease." The rapid recovery from this fever, tends we believe to corroborate the fact to which we have just alluded. It is observed in such diseases only, in which the brain and nerves remain for the most part unimpaired. The convalescence from typhus is long and tedious—that from scurvy remarkably short. The same is found to be the case in yellow fever, when patients, after labouring under the disease, and recovering from a state of the greatest danger, resume their ordinary strength and health, and return to their accustomed occupations, with a rapidity truly astonishing.

This leads us to notice some observations of our author in the fourth note appended to his work. After examining at some length the singular idea of Dalmas, who imagined he had discovered a great analogy between yellow fever and scurvy, he adopts the opinion of Broussais on the nature of this latter affection (without, however, giving him due credit for it) and in enumerating the many points of

difference between these two diseases, he proceeds to state that in scurvy the nervous system is not impaired, whereas in the yellow fever it is eminently so. As a proof of this absence of nervous irritation in scurvy, he alleges the integrity of the intellectual faculties, and the rapid recoveries of those affected with it. Now it strikes us as evident, that if the integrity of the intellectual faculties in scurvy proceeds from a want of participation of the nervous system in the morbid excitement, a similar state of the mind in yellow fever, which he confesses to be manifest, should depend on the same cause. But in order to strengthen his assertion, that the nervous excitement is eminently great, and forgetting perhaps the confession we have alluded to above, he maintains that the whole of the symptoms indicate a *superabundant expenditure of the vital principle*, and that all the faculties of the mind are over excited and troubled with exaggerated sensations. This in some cases may be correct. But as the very reverse of it very often occurs, it cannot be adduced in favour of his opinion. With respect to preternatural augmentation of strength of the muscular system in yellow fever, which he supposes to arise from the nervous excitation, and offers as presenting a striking point of difference between this disease and scurvy, in which the energy of the same system is almost entirely lost, we do not consider its occurrence so constant as to entitle it to be classed among the characteristic symptoms of the fever. We are told by Dr. Rush that "while the muscles and nerves in *many cases* exhibited so many marks of preternatural *weakness*, in *some* they appeared to be affected with preternatural excitement."

While we deny the great participation of the nervous system in the production of the phenomena of yellow fever, as maintained by our author, we are nevertheless willing to admit the fact, that the primary action of the remote cause is on the nerves, and not on the circulating fluids, as taught by the advocates of the humoral pathology. Cases of almost sudden death from exposure to miasmatic exhalations, sufficiently authorize us in entertaining this opinion. But that

we may be enabled to exhibit more clearly our views on the mode of production of yellow fever, we must indulge in a very few remarks on the action of miasmata.

As these can only operate on the sentient extremities of the nerves, they will naturally be found to produce their effects on those tissues of the body with which they come in immediate contact, and which are most plentifully supplied with nervous susceptibility. The epidermis, possessed as it is of so small a proportion of vital power, precludes the cutaneous surface from constituting the *common* avenue of the disease, and we are consequently led to regard the mucous membranes lining the digestive and pulmonic organs, and which, from their great degree of vitality and the importance of their functions, have been viewed as an internal sense, as alone affording the medium through which the poison can find entrance into the system. In some cases, however, the impression communicated to the brain by the irritated nerves is of such extreme intensity, that this organ is thereby paralyzed—re-action rendered impossible in the system, and this state is soon followed by a complete cessation in the functions of the organs necessary to the maintenance of life. In other instances, the sympathetic impression being less powerful, some feeble re-action takes place—and fever is the consequence. The brain nevertheless becomes the part principally affected—conveys a diseased action to some other organ of the body, but more especially to the stomach and intestines—and the patient, if not soon relieved, dies comatose or in violent convulsions, after a few days or even hours illness. This view of the subject accords perfectly with the phenomena of miasmatic fevers, in which the vital properties of these tissues are always found to be increased.

Our opinion of the nature of yellow fever may, after this, be expressed in a few words. The poison acting principally on the villous surface of the stomach and intestines, the nerves of these membranes are irritated, and transmit this irritation to the brain and heart, and re-action takes place in the system. The vital energy of the nervous membranes

being thus augmented, an influx of fluids is drawn towards them by virtue of that law long ago taught by the father of medicine, "*ubi stimulus ibi affluxus*"—inflammation ensues, and if not arrested, will terminate in black vomit, gangrene and death. Thus it will be found, that we regard yellow fever as a true gastro-enteritis—whilst the fever of the system we hold as altogether sympathetic, arising from a transmission of irritation from the organ primarily affected, to the heart and arteries.

From the preceding remarks it will be naturally inferred, that we cannot agree with our author when he asserts, that the inflammation of the gastric system becomes violent in proportion as the sedative influence of the remote cause is felt by the circulation and enfeebles it. We believe that in direct ratio to the increase of the inflammation and the progress of disorganization, so the circulation loses its energy—which indeed we find to be the case in all those inflammatory diseases in which *sedative poisons* are supposed not to exist.

The cessation of spasm from exhaustion of the nervous system, and the consequent supervention of inflammation in the villous surface of the stomach and intestines from the continued action on them of the remote cause, is an idea untenable. To render this part of his theory plausible, our author should first have established beyond the possibility of doubt, the existence of this spasm to which he refers the symptoms of the first stage. Having failed to accomplish this, his notions respecting the formation of the second stage, fall to the ground. Besides, independently of other objections that might be adduced against it, this theory requires the continued action of the miasmata, which would render the coming on of a second stage impossible when the patients have been removed beyond the further reach of such effluvia. Nor can we understand how the inflammation in tissues of the body so essentially necessary to life, as the mucous surfaces of the digestive tube evidently are, can possibly be marked by an almost immediate cessation of all the symptoms of the first stage of the disease. Were this view of the subject

correct, then the local inflammation of yellow fever would prove anomalous, and truly specific both in nature and effect.

Our author's explanation of the third stage, is likewise defective in the extreme. Though symptoms of nervous irritation do sometimes take place at this period of the disease, we should unhesitatingly refer them to something independent of spasm. They depend on the extension of irritation to the brain and nerves, whilst, at the same time, that existing in the stomach and intestines being not arrested, naturally proceeds to black vomit, which we regard as an exudation of vitiated blood, and not necessarily the result of gangrene, as our author seems to suppose. Mortification sometimes takes place, and the patient dies either comatose or in violent convulsions. But all this may and does occur without the continued action of the *sedative* poison.

Were the aggravation of the internal inflammation, and its subsequent termination in gangrene, dependent, as he conjectures, on the general debility of the system, and not on its natural progress, it follows, that in all diseases having their origin in local inflammation, it would prove highly dangerous to use depletory remedies and the antiphlogistic regimen, for fear of increasing the danger of mortification in the affected part. It hence follows, too, that the reverse practice would be most proper—and, in order to cure local inflammation, we must stimulate the general system. Yet our author considers himself no Brunnonian!

But this *spasmodic* theory, so confidently advanced, is not merely fanciful and erroneous. It is dangerous in its practical application, as we shall now endeavour to point out in examining the principles laid down by him for the treatment of the disease.

“That nature,” says he, “may struggle with greater advantage against her oppressive enemy, it is the duty of the physician to endeavour to moderate the excitement of the nervous system—next to lessen gastric irritability, and to maintain the integrity of respiration—then to promote the re-establishment of such of the functions as are deranged

or suspended—and finally, to purify the surrounding atmosphere.”

In pursuance of this plan, in the first stage of the disease, to remove *spasm*, opium must be given both internally and externally, and continued until sleep is procured. To this remedy may be conjoined a few glysters, the warm bath, and cold applications to the head. In the second stage, we must again administer *opium*, to which is now added extract of bark—gentian and valerian—camphor and nitre—musk in large doses—opium and calomel—the warm bath, with the addition of alcohol—frictions with limejuice—blisters—and sinapisms to the feet. When the vomiting continues obstinate, we must suspend the internal administration of all remedies, except small quantities of cold lemonade—and, in place of them, resort to embrocations to the abdomen with a liniment, of which *opium*, camphor, and the extract of bark, constitute the principal ingredients. Injections with *opium* are likewise to be given. In the third stage of the disease, the same remedies are used, with the exception of musk. He lays the greatest stress on the necessity of using external excitants, and says that so soon as pain returns in the stomach, opiate applications are to be employed. He further recommends the combination of opium and calomel, in such doses, however, as will ensure their exciting effects without endangering a salivation.

It is observed, he says, that in yellow fever the muscular system is over excited, at the same time that the circulation becomes very much enfeebled. This must be attributed to an atonic state of the lungs producing an incomplete asphyxia of the blood vessels, (asphyxia attended with increased muscular excitement!!) and is to be treated by means of a combination of nitric acid, opium and water, as recommended by Hope in dysentery. He further believes, that nitric acid may be beneficial by neutralizing chemically the miasmata producing the disease—for this medicine decomposes all mineral poisons, the effects of which on the animal economy, bear some *degree of analogy with that of yellow fever*.

During convalescence, he recommends the greatest attention to diet, &c., since any imprudence may occasion a chronic inflammation of the mucous membrane of the digestive organs, though never a return of yellow fever—as in order that this latter should take place, it is necessary the patient should have already *reacquired his muscular strength, without the predominance of which the disease cannot occur!!*

It is not our intention to show in what we consider a practice, such as we have just detailed, defective. Its dangers are so glaring—experience has so often demonstrated the *fatal* consequences which attend its adoption, that our remarks would, in all probability, prove unnecessary. To give opium from the very commencement of the disease, in order to remove spasm—to push its employment until sleep is procured—next to administer *opium*, for the purpose of removing inflammation—and to render it more efficacious, to unite with it an extract of bark—valerian, gentian, and other tonics—and thirdly, to have recourse again to this remedy, with the avowed intention of destroying the returned spasm—giving strength to the patient and quieting the stomach—and, in conjunction with nitric acid, to use it for the purpose of curing the *asphyxia*! All this, we repeat, will undoubtedly appear to the generality of our readers, the *ne plus ultra* of error, and notwithstanding some declamation against Brown is a decided adoption of the practical precepts advocated by this original though dangerous innovator.

But our author appeals to his experience, and cites some names in support of his practice of the use of opium in yellow fever. We are told that Schotti and Bruce extol its virtues in this disease—Jackson and Hillary recommend it—and Sarcone and Huxham employed it in other diseases of an inflammatory nature. A reference to the works of Jackson, will convince any one that this celebrated physician, so far from making much use of this remedy, seems to have prescribed it only as a *stimulant*, and in conjunction with bark, wine, &c. in the latter stages of the disease—and Dr. Hillary, (who, according to our author, has, of

all physicians, made the most *rational* use of it) only administered it after bleeding, and for the purpose of putting a stop to the vomiting which he excited by means of warm water or the like, (and not of emetics, for fear of aggravating the *inflammation of the stomach*.) Notwithstanding, therefore, the *experience* of our author, and differing as we do from him in our pathological views of the disease, we are decidedly of opinion that opium, in all stages of this fever, (unless, perhaps, to remedy some accidental affection) is injurious. In the first stage, it will tend to increase the irritation of the stomach, and thus aggravate all the symptoms of the case—and in the second and third stages, prove dangerous from its great tendency to occasion coma, delirium, and other states, not a little difficult to remove. The testimonies of Mosely, Wade, Rush, &c., sufficiently support us in this sentiment, and will render unnecessary any further observation on the subject.

In most cases, our author prescribes emetics, and condemns in positive terms the use of drastic purgatives. On no other pathological views, than those we have advocated, can we satisfactorily explain the bad effects of these medicines in the fever before us. The former, by the violent contraction of the stomach, and likewise by the stimulating nature of the substances employed, induces in the mucous surface of that organ an increase of irritation, and a consequent aggravation of all the symptoms depending on that cause: drastic purgatives have a similar effect on the intestines, and contribute, in no small degree, to augment the already great danger of the case. This very hazardous, and we may say, unphilosophical method of treating febrile affections, which has been graced with the appellation of bold practice, and proclaimed as far superior to the milder one, has, we do not hesitate to assert, originated in the reigning theories of the schools. Considering diseases as so many noxious and independent beings, preying on the economy at large—each demanding a separate and specific treatment—and mixing with this abstract system, which has, in latter times, received the name of *ontological*, some remnants of

the old humoral pathology, physicians have in general engaged in the treatment of all maladies, but more particularly of those named *essential* fevers, with the determination of exterminating the *abstract* disease, without paying regard to the suffering of the various organs affected, and have, in order to attain their object, had recourse to the most energetic medicines. It is our firm conviction, that this view of disease is erroneous, and that so long as pathological reasonings are grounded on such principles, therapeutics will not emerge from the state of uncertainty, in which confessedly the science is now placed. Happily, however, the application of physiology to pathology is fast gaining ascendancy, and we confidently hope, ere long, will receive the unanimous sanction of physicians. In the investigation of a disease our object should invariably be to ascertain the organ principally effected—in what its present state differs from its healthy condition, and lastly, by what means it can be restored to the performance of its natural functions. Having succeeded in attaining the first part of our inquiries, and apprised, by a previous study of physiology, of the sympathies of each individual organ with the rest of the system, we shall experience little difficulty in discriminating those affections that are merely symptomatic, from such as are primary, and thus avoiding many errors, succeed in attacking the disease in its true seat. Now, let us apply these principles to the treatment of yellow fever, and we shall easily discover that emetics and drastic purgatives administered for the purpose of evacuating the *acrid contents of the stomach and intestines*, and by their action on the general system, to exterminate the *abstract* fever, will serve in a great majority of cases to add to the disease by the increase of the irritation they occasion. That such is the fact we appeal to the testimony of every unprejudiced physician, who is much conversant with this disease. We have seen that our author himself, lays considerable stress on the danger attending the use of these remedies, especially purgatives, and grounds his opinion on principles nearly similar to those we have advanced—but while we applaud him

for entertaining such correct ideas on this subject, we cannot reconcile this with his recommendation of opium and the extract of bark, gentian and valerian in that stage of the disease, he considers as affording evidence of inflammation in the mucous tissues. These remedies are, undoubtedly, as stimulating as an emetic or a purgative, and if the latter are abstained from in the treatment of yellow fever, it does not require much penetration to see the danger attending the administration of the former.

The chapter on contagion, is certainly the part of this work which deserves the highest praise. We regard it as exceedingly well drawn up, and it contains some very able arguments, demonstrating the erroneous notion prevailing among many of the most intelligent of our citizens, and a few of our medical brethren, that this fever is possessed of the direful property of spreading by contagion. The explanations which he has given of many facts, considered by his antagonists as conclusively substantiating the correctness of their opinion, are very successful, and such as might be anticipated from an impartial and well informed writer. Not a few of the examples of non-contagion with which he has favoured us, are we think, well calculated to confirm that doctrine—and we were not a little pleased to find him so decidedly opposed to the singular idea entertained by Hernandez, Morreau De Jonnes, the Spanish physicians in general, and their blind followers Pariset, namely, that this fever is sometimes contagious, and at other times void of such a property. Among, indeed, the many strange subtleties invented by the contagionists, in order to lend some aid to their feeble and tottering cause, that of depriving the disease of this property whenever facts become so numerous and conclusive, as to baffle their endeavours, to distort and arrange them in a manner best suited to their views—and again, to repossess it of this virus under other circumstances, stands pre-eminent—serving to prove, that men, whenever engaged in the defence of an untenable cause, snatch at the least idea calculated to furnish them with

support, regardless of the innumerable inconsistencies into which they may thus be led.

A disease characterized by a certain train of symptoms, and which is contagious, or capable of being transmitted from a diseased individual to one or more in health, derives this property from a peculiar virus, which pathologists have agreed to consider as a morbid secretion of the blood-vessels, and which, as far as our present knowledge of the laws of contagion will permit us to decide, constitutes an inherent attribute of the disease, and will be manifest so long as the malady itself has existence. Now we do not know of any *truly* contagious disease, which can or does lose this property under any circumstances whatever—and why the yellow fever, supposing it to be possessed of a peculiar virus, should be deprived of it during whole seasons, and repossess it in others—or in other words, that only the blood-vessels charged with the secretion of this substance (if substance it is,) should lose this power for a certain time, and again enjoy it at others, is a question not a little difficult to understand, and which it will puzzle the defenders of the hypothesis to explain satisfactorily. We shall therefore, until the explanation is given, continue steadfast in our faith, and regard our opponents as having as yet adduced not a single fact, or argument to invalidate it.

The succeeding chapter being filled with observations on the territory of New Orleans, and the local causes of the yellow fever—or the means best calculated to destroy them, or at least to diminish their intensity, we have not thought necessary to examine in this place. These subjects can in fact interest none, except physicians who reside in the city of New Orleans, or its vicinity, and to such therefore we recommend a perusal of this part of the work. With the one hundred and seventy-five pages of notes we have nothing to do—they, for the most part, are introduced in support of the author's peculiar theories, and having already animadverted on these, we are not disposed to resume the subject. We shall therefore, terminate here our remarks,

for the undue length and minuteness of which, we ask the forgiveness of our readers. We are perfectly aware that many may allege in answer to us, that "*la critique est aisée, mais l'art difficile.*"

There can be little doubt of the truth of this aphorism. We feel it on the present occasion, and though we have taken the liberty, from a sense of duty, of exposing with some severity, what we deem to be pernicious errors, we are not less sensible of the general merits of the work, and hope that the intelligent author of it, may be encouraged to prosecute further inquiries into a disease, which in every respect, has such high claims to attention.*

* We derive the above Review from one of the most valuable of the contributors to this Journal. While we coincide in the general views which he has taken of the subject, there are a few points on which we differ, and especially, as regards the doctrine of yellow fever being an aggravated form of our common indigenous bilious fever, occasionally occurring in the interior of the country. We believe, it on the contrary, to be a specific disease, in the ordinary sense of the term, and though not generally imported, to be always confined exclusively to the margin of our sea-port towns.

EDITOR.

BIOGRAPHY.

ART. XVII. *Eulogium on William Shippen, M. D. &c. delivered before the College of Physicians of Philadelphia, March, 1809.*

By CASPAR WISTAR, M. D., one of the Censors, and Professor of Anatomy in the University of Pennsylvania.

WILLIAM SHIPPEN, whose memory is honoured by the regard which you have expressed for it, was descended from one of the associates of the illustrious founder of Pennsylvania. His great grandfather, Edward Shippen, settled originally at Boston, but removed to Philadelphia soon after the first arrival of William Penn, in consequence of the proprietor's very pressing request. The part which this gentleman acted in the new settlement, fully justified the proprietor's invitation—having filled, successively, almost all the important offices in the government, and contributed greatly to the improvement of this city. Though his sons do not appear to have taken an active part in public affairs, his grandsons, Edward Shippen, father of the late Chief Justice, and Doctor William Shippen, senior, father of the late President of our college, were distinguished citizens of Pennsylvania.

The elder Doctor Shippen, was educated wholly in Philadelphia, and at an early period in the last century, when, from the state of the colony, the opportunities of improvement must have been very limited. Yet, by the force of his native genius, he rose to a very respectable rank among his colleagues, who had the benefit of an education in Europe, on a liberal and extensive plan. From one of these he took lessons in anatomy, and became, by study, a proficient in chemistry and natural philosophy. In the honourable public exertions made by the physicians of his day, he bore his proportionate part, and, in addition to his efforts for the

benefit of his native state, was very active in favour of the College of New Jersey. He relinquished the practice of medicine about the sixtieth year of his life, but lived a long time after,—his health and intellectual powers continuing unimpaired to the advanced age of ninety.—His son, the subject of this memoir, was born in the year 1736, and passed the early part of his life in Philadelphia. At the usual age he was placed in an highly respectable grammar school, which was kept at Nottingham, in Chester county, by Mr. Finlay, afterwards principal of the College of New Jersey. At that period, no college or large chartered school existed between New Haven in Connecticut, and Williamsburgh in Virginia,—but there were several valuable private seminaries in Pennsylvania—and among them Mr. Finlay's was much distinguished—particularly for the attainments of his pupils in the learned languages.

He appears to have availed himself of these early advantages—as, when removed to the College of New Jersey, which was soon after established at Newark, in that state, he evinced a very critical knowledge of the Latin language. Among other exercises public speaking was much practised, and at this time he began to display that fine elocution which was so conspicuous during his life. He passed through the usual studies, and graduated under president Burr. His great reputation as a speaker procured for him the appointment of valedictory orator at the commencement, and he acquitted himself so well, that the celebrated preacher Whitefield, who happened to be present, addressed him publicly, and declaring that he had never heard better speaking, urged him to devote himself to the pulpit. This was in 1754. The three following years he spent in this city, under the care of his father, as a student of medicine, and embarked for Europe, soon after at the age of twenty-one. I have not been able to determine whether he had any views of teaching anatomy. From the particular turn of mind of his father, and his mode of studying this branch of science, I think it is very probable that he may have first suggested the scheme. He seems, however, to have devoted himself to the

cultivation of anatomy immediately on his arrival in Europe. His first residence was in London, and in the family of Mr. John Hunter, since so deservedly celebrated. Mr. Hunter, at that time, assisted his brother in anatomical lectures, and appears to have devoted all his leisure to the study of comparative anatomy. He was unmarried, and, when at home, some of the objects of his study were always before him. At this place, and at Doctor William Hunter's theatre in Covent Garden, young Shippen spent a great part of his time. As Hunter was considered one of the first demonstrators of anatomy, his pupil, being sensible of his excellence, most probably imitated his manner. During his connexion with the Hunters, he often associated with the well known Mr. William Hewson, and appears also to have enjoyed the particular favour of the very eminent Sir John Pringle. Having attended, with Pringle, the examination of several patients who had died under his care, he used often to mention the candour of that great physician, in urging these anatomists to declare freely their sentiments of the diseased appearances, without regard to his previous opinion. At this time also commenced his acquaintance with Dr. John Fothergill. The people of Pennsylvania seem always to have been regarded with affection by this benevolent individual, but at the present period he was more interested for them than usual. The Pennsylvania Hospital had lately been erected. He took it for granted that students would resort to it, and supposed that they might experience great difficulty in acquiring a knowledge of anatomy. To remedy this defect in their medical education, he employed Rimsdyck, one of the first artists of Great Britain, to execute the crayon paintings now in that institution, which exhibit the whole structure of the body, of the full size, and the gravid uterus, with many of the varied circumstances of *natural and preternatural* parturition. An anatomist of London, of the name of Jenty, is said to have made the dissections from which these paintings were taken, under the occasional inspection of Dr. Hunter. They are reported to have cost two hundred guineas, and with one hundred and fifty guineas in

addition, which he contributed to the hospital, constitute a most substantial proof of his regard as well as of his liberality. It appears, both from the information given by Dr. Shippen, and the letter of Dr. Fothergill which accompanied the paintings, that they had several conversations upon the subject of teaching anatomy in America. It is therefore probable, that the plan must have originated at this time. But while cultivating anatomy in London, he was equally intent upon midwifery. The lectures of Hunter on this subject were very interesting, and Shippen seems to have attended them with great care, and to have become a convert to most of the peculiar doctrines of his preceptor. In the summer season, he also attended the lectures of a celebrated accoucheur, Dr. M'Kenzie, which were delivered near St. Thomas's Hospital, on the south side of London—and resided in a very obscure part of the borough, for the purpose of practising midwifery amongst the poor.

During his residence in Great Britain, he studied and graduated at Edinburgh. His thesis was on a very important subject, *DE PLACENTÆ CUM UTERO NEXU*. He left Edinburgh with sentiments of the greatest veneration for Cullen and the elder Monro—the second professor of that name, who has since acquired such well merited celebrity, having then only commenced his professional career.

After finishing his studies in Great Britain, he wished to visit France. But this was rendered difficult by the war, which then existed between those countries. On this account his friend, Sir John Pringle, introduced him to a lady affected with pulmonary consumption, who interested George II. to obtain, from the court of France, permission to travel, for the benefit of her health, in the southern parts of that country. He accompanied her in a medical capacity, and, in consequence, formed a more intimate acquaintance with the celebrated Senac, and some other physicians of Paris, than he could otherwise have done.

About this period he married his countrywoman, Miss Lee of Virginia, daughter of Thomas Lee, a gentleman of

the first respectability in the Colony, and President of the Governor's Council.

He resided a short time in France, and returned to his native country in the year 1762, fully determined to teach Anatomy by dissection, and to practise Midwifery. As both these schemes were new to a large majority of the community, in which they were to be executed, the undertaking must have been considered as very delicate. An acquaintance with the two subjects was not all that was necessary to insure success: few things require more knowledge of human nature, and greater powers of accommodation to the feelings of the human heart.

In forming an opinion of the qualifications of Doctor Shippen in these respects, we must not have in mind the old man we have latterly been accustomed to see, changed by time, and by heart-rending disappointment, and a succession of diseases. We shall find the description of him, when he returned from Europe, most essentially different. Nature had been uncommonly bountiful in his form and endowments. His person was graceful, his manners polished, his conversation various, and the tones of his voice singularly sweet and conciliatory. In his intercourse with society he was gay without levity, and dignified without haughtiness or austerity.

He belonged to a family, proverbial for good temper. His father, whom he strongly resembled in this respect, during the long life of ninety years, had scarcely ever been seen out of humour. He was also particularly agreeable to young people. Known as he was to almost every citizen of Philadelphia, it is probable that there was no one who did not wish him well. This portrait is strongly coloured, but there are yet many amongst us who remember the original, and to them I appeal for its truth.

If Doctor Shippen was fortunate, in possessing many requisites for the enterprise in which he was about to engage, he was equally so as to the state of medicine in the city when he commenced it. To render this evident, I will quit, for a short time, the proper subject of my memoir,

and take a general view of the successive practitioners of medicine in Philadelphia, in the order of time in which they lived.

The first physicians were two Welsh gentlemen, who came with the original settlers, in 1682. One of these, Thomas Wynne, is said to have practised with great reputation in London. But he died within ten years after his arrival, and was much engaged in political business during his residence here. He therefore does not appear to have given any particular direction to the medical profession. His pupil, however, Edward Jones of Merion, on the west side of Schuylkill, a man of great worth, educated a son in his own profession. This son continued the professional education to his nephew, our respected predecessor, Doctor Cadwalader, and he extended it to our late beloved Vice President, Doctor John Jones. The other original physician was Griffith Owen, who arrived in the prime of life, and lived here many years. He is said to have done the principal medical business, and was highly respected for his talents, integrity, and zeal. If the circumstance had not occurred so often, that we are become familiar with it, we should be greatly surprised, that a practitioner of this description, should pass through life, without committing to writing any account of the diseases which occurred, or of the method of treating them he found most efficacious: such, however, seems to have been the fact. He died in 1717, about the age of seventy, and left a son, who practiced medicine here some time after his father's death. Excepting these, I have not heard of any physician of respectability in Philadelphia, from the first settlement, until the arrival of Doctor John Kearsly, senior, and Doctor Græme, the latter of whom came hither in the year in which Doctor Owen died. The former probably arrived some time before. He was, for many years, a very industrious practitioner, both in medicine and surgery, though, like Owen, he does not appear to have committed to paper any of his professional observations. Yet he was not deficient in public spirit. We are more indebted to him than to any other man, for that res-

pectable edifice, Christ Church—and by will, he founded and endowed a hospital for poor widows. He educated our late respectable president, Doctor John Redman, and the worthy Doctor John Bard, of New York. His cotemporary, Doctor Græme, came from Great Britain with the governor, Sir William Keith, and, of course, had an advantageous introduction. He was about thirty years of age, when he arrived, had an excellent education and agreeable manners,—and was, therefore, much employed as a practitioner, and greatly confided in by his fellow citizens. But, the promotion of science, with him too, does not appear to have occupied much attention. He exhibited, however, to the people of this part of America, an object which was then entirely new to most of them—a very large farm, Græme Park, completely surrounded with a hedge, and embellished with great taste and elegance.

Deficient as our city was in the advantages of medical science, at this period, still two young men, who received all their education here, made a very respectable proficiency. These were Doctor Shippen, senior, whom I have already mentioned, and Doctor Lloyd Zachary—the latter of whom was very nearly related to those distinguished citizens, Isaac and Charles Norris. He probably commenced the practice of medicine between 1720 and 30, and died in the year 1756, in the meridian of life, greatly and most deservedly respected. The two last mentioned physicians may be considered as belonging to the medical period in which Doctor Shippen's undertaking commenced—for, though Zachary died some years before, he acted an important part in several of the transactions which distinguish this time. He was one of the founders, and a very liberal contributor, both of the college and of the hospital.

We have now come to the time of the medical men who were in practice when Doctor Shippen arrived. The eldest of them was our eminent predecessor, Thomas Bond. This celebrated physician and surgeon was a native of Maryland, and studied there under Doctor Hamilton, a very learned practitioner. Afterwards he travelled in Europe, and spent

a considerable time in Paris, where he attended the practice of the Hotel Dieu.

He began the practice of medicine in this city, about the year 1734, and soon attracted the public attention. He was amongst the founders of the college and academy, and one of the most active managers of the Pennsylvania hospital, at its commencement. With his brother, Phineas Bond, and Lloyd Zachary, he made the first offer to attend that institution as physicians and surgeons. He was an officer of the Philosophical Society, from its first establishment, and appears by the old records to have been a member of a smaller society, instituted in 1743, of which Dr. Benjamin Franklin, William Coleman, John Bartram the botanist, and Doctor Phineas Bond, were also members. This society, in 1768, united with another which had also been a long time in existence, and the two bodies then assumed the name and form which is now employed. His brother, Doctor Phineas Bond, who was several years younger, was also originally educated in Maryland, and subsequently studied medicine upon a most extensive scale. He passed a considerable time at Leyden, Paris, Edinburgh and London, and was not less disposed to promote, than well qualified to judge, of every undertaking for the improvement of his country. In conjunction with the much respected Thomas Hopkinson, he originated the scheme of the college, now the University of Pennsylvania. Not practising surgery, he moved in a different line from his brother. But no medical man among us, ever left behind him a higher character for professional sagacity, or the amiable qualities of the heart.

Doctor Thomas Cadwalader, who has already been named, comes now to be again mentioned. To complete his education, he went to England, and, I believe, also to France. He studied anatomy under the celebrated Cheselden, and, according to correct information, I find, that on his return home, he made dissections and demonstrations, for the instruction of the elder Doctor Shippen, and some others, who had not been abroad. This, probably, was the first business of the kind ever done in Pennsylvania.

From the place of its performance, the back part of the lot on which the Bank of Pennsylvania now stands, I suppose that the anatomy of that day, as well as of the present, enjoyed the honourable protection of literature. The dissections were made, I have reason to believe, under the auspices of the most profound scholar of Pennsylvania—the President, James Logan, founder of the Loganian Library. Cadwalader made equal steps with the Bonds, in promoting the interests of the Hospital, College, and Philosophical Society, and always had a great share of well-merited influence with his fellow-citizens.

The elder Shippen, though his opportunities had been very different, maintained an equal rank in his profession with these gentlemen, and also paid great attention to the public objects I have mentioned.

The fifth man of this class, was our late worthy President, Doctor John Redman. He first studied in Philadelphia, as we have before said, under Kearsly, and then, in quest of improvement, visited London, Edinburgh, and Paris. He graduated in Leyden, a short time after the death of Boerhaave. His professional education was of a superior kind. He was much employed as a practitioner, soon after his return to the city, and was long a faithful physician of the Hospital. He was also a trustee of the College, and a member of the Philosophical Society. But from the extent of his practice he had very little leisure for literary or philosophical pursuits.

The youngest physician of this set, was Doctor Cadwalader Evans. He had been one of the first pupils of Thomas Bond, and completed his medical education in England. Descended from a much venerated early settler, he, with the rest of his family, retained the virtue and character of their ancestor, having a great share of public spirit as well as of professional worth.

From this short sketch of the history of our predecessors, I think it may be inferred, that they effected a most important change in the literature and science of their country. When we consider the state of the public mind, as evinced

by the establishment of the Hospital, College, and the Philosophical Society—when we reflect, that the experiments of Franklin, on the lightning of heaven, must have prepared our fellow citizens for the investigation of every other part of nature, and that the sacred principle of toleration, established by our great founder, may also have operated in favour of anatomy—we must conclude, that Shippen could not have fixed upon any part of the new world, which, at that time, was more auspicious to his enterprize. Nor was he disposed to neglect any of the advantages which it afforded.

He arrived in May, 1762, and the anatomical paintings, formerly alluded to, came soon after. The disinterested philanthropy of Fothergill, was satisfied with mentioning them in a private letter to his worthy acquaintance, James Pemberton, without a formal presentation to the Hospital. Our friend was the first to notify their arrival to the managers of the Institution, and to offer his assistance in making a proper arrangement of them. Mr. Pemberton produced his letter, dated April, 1762, by which it appeared, that Fothergill expected Shippen would explain them. Mentioning Shippen's intention to give lectures, he says, "that he is well qualified—that he will soon be followed by an able assistant, Doctor John Morgan—and, that if countenanced by the legislature, they will be very useful, and erect a school of medicine." The paintings were soon put up, and may be considered as the precursors of Shippen's dissections, since in the autumn of the same year, as soon as the season permitted, his first course of Anatomy began. The introductory lecture was delivered in one of the large apartments of the State-House, and many of the gentlemen of Philadelphia heard it with pleasure. The number of students, who attended his course, amounted *only to twelve*,—such was the origin of our medical school! I hope this statement will convey satisfactory information to those of my auditors, who may not have known, why the College of Physicians feels great respect for the memory of Doctor Shippen.

Three courses of lectures he gave unconnected with any institution, when, May 3d, 1765, Doctor John Morgan laid before the trustees of the College, a plan for establishing a Medical School, under their auspices, accompanied by a letter from the honourable Thomas Penn, recommending the plan to their patronage. It appears by the minutes of the board, that in consequence of this and other letters, from their high sense of his abilities, and the honours conferred on him abroad, they unanimously appointed Morgan, Professor of the Theory and Practice of Medicine, at this meeting, and in the same month, at a commencement of graduates in the arts, he delivered a very appropriate address, on the establishment of medical schools in America.

In September, Doctor Shippen addressed a letter to the trustees, stating, that the institution of a medical school had been his favourite object, for seven years, and that he had proposed it three years before, in his first introductory lecture, upon which, he was immediately and unanimously chosen Professor of Anatomy and Surgery. Five of the six physicians of Philadelphia were trustees of the College. They united with Doctor William Smith, the Provost, and the two medical professors, in digesting a code of rules for the new establishment, and thus gave it the academic form, which has ever since proved of the greatest utility. The anatomical lectures were regularly delivered, from year to year, until the fourteenth course, which was in the winter of 1775, when they were suspended, by the war of the Revolution. The annual number of students, by this time, had increased to between thirty and forty.

Doctor Adam Kuhn, and Doctor Benjamin Rush, who had been appointed Professors, lectured several years, very successfully, on *Materia Medica*, and on Chemistry. Several graduations of batchelors of medicine had taken place. James Tilton of Delaware, Jonathan Elmer of New Jersey, the late Jonathan Potts, and the late Nicholas Way, had taken the degree of doctor of medicine. The school, of course, was completely established, and Shippen's character, as a lecturer, decided by the number of his stu-

dents—for he had now taught nearly three hundred and forty. Many of them afterwards went abroad, to perfect their education, and returned to practise in their native country. All these travellers, I believe, without a single exception, and without conferring together, declared that they had met with no man who was superior to Shippen, as a demonstrator of Anatomy—and very few indeed, that were equal to him.

In explaining the success of Dr. Shippen, in teaching anatomy, we must take into view another faculty, which he also exerted with great effect. He went through the substance of each preceding lecture by interrogation, instead of recapitulation, thus fixing the attention of the students—and his manner was so happy, that this grave process proceeded like a piece of amusement. His irony was of a delicate kind, and so blended with good humour, that he could repress forwardness, and take notice of negligence, so as to admonish his class without too much exposing the defaulter.*

In this manner was he proceeding with his favourite scheme, when his career was suspended by his entering into the medical department of the army in the year 1776. Though he continued in this station till 1780, his anatomical lectures were interrupted only during the winters of 1776 and 1777. He afterwards came to the city, for the purpose of delivering the accustomed courses, which were necessarily shorter than before.

In January, 1781, he resigned the post of director general of the medical department of the army, three months after he had been, a second time, elected to it, determined to resume all his former pursuits. He had apartments of his own construction, every way adequate to the accommodation of his class, with proper arrangements also for teaching practical anatomy.

During many years, he devoted himself very much to the

* He appears to have been a zealous member of the Philosophical Society. He was appointed on many of the permanent committees of that body—and he preserved, during the revolutionary war, all the journals and original papers of the institution which escaped destruction.

practice of midwifery, effecting by these means a great change in the habits of the city. From the account already given of his studies and manners, it is evident, that he was particularly calculated for succeeding in this undertaking. But there was an inherent difficulty in the business. Confessed as it now is, that the important process of parturition ought to be superintended by persons whose professional knowledge will enable them to decide confidently, and to act promptly when the case requires it, still in Philadelphia, at this time, there were very few occasions where medical men were employed for this purpose in the first instance. It was only when something very important was to be done, that they were resorted to—and, very often, when too late. This was altogether the effect of prejudice, and not of necessity, for several of the medical gentlemen were accoucheurs—and our late worthy president, Doctor Redman, had been declared, by Doctor Bond, to be the best obstetrical practitioner he had ever known—yet, he attended very few natural labours. By Shippen this prejudice was so done away, that in the course of ten years he became very fully employed. He also taught midwifery. Prior to the revolution, he seems to have had a distinct class of students in this branch: after that period, he delivered a short course to his general class, and, brilliant as he generally was, I believe there was no lecture in which he shone so much, as in his introductory one to midwifery, upon the subject of address and deportment.

In every country, the commencement of this practice by a young man, is an affair of great difficulty, requiring the combined exertions of good sense and address, with some knowledge of human nature. His auditors were generally young, and probably unused to reflections of this kind. He, therefore, portrayed, in strong colours, the feelings of delicate women on such occasions, and thence inferred the necessity of the practitioner avoiding every appearance of officiousness, and of waiting till his interference was really necessary, when, he declared, it would ever be gratefully received.

After lecturing and practising as accoucheur, surgeon, and physician, for ten or twelve years, subsequently to leaving the army, his habits suffered an immense alteration, by an occurrence, which, as far as respected himself, was one of the most important and afflicting that he had ever experienced. He had raised two children, and of these one only was a boy. His son had every advantage in education that good sense and knowledge of human nature, that respectable connexions, and finally, that money could procure for him—and, such were his talents and application, that his proficiency was equal to his opportunities. He had often been caressed by Washington—he went abroad, and visited France, under the auspices of Jefferson—whilst in England, he enjoyed the countenance of the late president Adams, and was on intimate terms with lord Shelburne. His letters from those countries were so replete with information and ability, that they gave great pleasure to many persons, to whom his delighted father used to read them. After four years of absence he returned, and proved to be exactly what parental affection wished. He was not only a man of talents and information, but of great virtue and strong filial attachment. Shippen would have loved him as a friend, had there been no other connexion between them. The feelings excited by these qualities, produced a degree of fondness for his son, which has seldom been equalled. He seemed to lose sight of himself, and forget that he also had a part to act, so fully was his attention absorbed by this endeared object. His strongest wish was to pass the remainder of his life as his son's guest. He, therefore, gave him the fairest portion of his estate, and, to obtain leisure and exemption from care, procured the establishment of an adjunct professorship of anatomy. But, alas, instead of realizing any of these fond hopes, he had to endure a disappointment the most painful which suffering humanity can experience.

In 1792, his son began to complain of ill health. The father in vain devoted to him almost the whole of his time, and consulted, occasionally, all his medical friends. After

a great variety of efforts for his relief, and much suffering on his part, he died, in 1798. Thus the object upon which he founded hopes of comfort, for the remainder of his life, and which he had contemplated with increasing tenderness for thirty years, was,—for ever,—done away.

Though this heavy stroke did not entirely prostrate him, it did him a greater injury, by destroying the interest he felt in every remaining object. It cut the sinews of his exertions, and left him gradually to wither,—the amiable victim of paternal affection. From this time his business, as a practitioner, declined. He seldom lectured on anatomy, and generally with reluctance, though, when he did lecture, he always gave the greatest pleasure to his class.

The only studies to which he applied himself, after this period, were of a religious nature. He was educated in the doctrines of the Presbyterian church. But he now read and thought much on the subject of universal restoration, and finally adopted that belief, with great confidence.

Three years ago, his spirits appeared again to return. He was attacked, however, with vertigo, which greatly depressed him, and which was soon followed by symptoms of hydrothorax. Last winter he delivered the introductory lecture, though very infirm, and unlike what he had formerly been. Yet he was much roused by the appearance of the class, in the new theatre, and feelingly described his emotions, upon comparing these with his original set of students, forty years before,* and on reflecting, that every medical professor in the institution had been taught anatomy by himself. It was indeed impossible that he could survey the result of his labours without sincere satisfaction. Of his elder students, there were some to be found in almost every State, who were amongst the most distinguished of their profession, and, in latter times, he had seen the pupils of his school, extend in various directions, from the Hudson far beyond the Ohio, and from the shores of lake Erie, to the borders of the gulf of Mexico.

* The class was now probably near four hundred.—EDITOR.

During this course, he lectured, as usual, on Midwifery. But in the succeeding spring his debility increased, and he removed, early in the summer, to Germantown. Here he was attacked by an anthrax, which so much increased his weakness, that he sunk under it, on the eleventh day of July, 1808.

From this review of the professional career of our deceased friend, it appears, that he had the peculiar talent of successfully promoting an object of immense utility to his country—and, that his steadiness in pursuit thereof, entitles him to be ranked amongst the benefactors of mankind. To this, it ought to be added, that, after an eventful life, he left the world without an enemy, whilst many indeed, sincerely regret, that the amiable *Shippen is no more!*

ART. XVIII. *Obituary Notice of* EDWARD BARTON, M. D.

THE ordinary ravages of death upon our species, though unceasing, are regarded with very little attention, and multitudes of our fellow creatures pass daily to the tomb, without exciting regret or sorrow among the living. Yet, the mortality of our race is ever a theme of solemn and useful reflection.

The vast varieties of disease by which we are assailed at every age, and the great diversity of circumstances under which we go down to the grave, are considerations calculated to arrest the attention of the most careless, and to convey instruction to the most stupid. These considerations impress us with a sense of the countless perils which beset our being—as well as of the certainty that it must end—and yet our feelings are variously affected by the particular strokes of the destroyer. It is a melancholy spectacle, indeed, to see the infant, that has just struggled into existence, live its hour of suffering, and die in agony—but there is consolation in the belief, that its Master has called it to his own

service, and to a better enjoyment. When the man who is ripe and full of life and energy, is suddenly removed from the midst of public and private usefulness—we bow before the inscrutable purposes of God, in the mysterious bereavement—with the reflection, however, that the deceased was permitted to accomplish some part of the business of life—to scatter the seeds of future usefulness in others—and to leave behind a memory which is sweet to the survivors. The untimely dissolution, and even the decay of our nature, is full of mournful circumstance—though often blended with that which is comforting and consolatory. But there is something peculiarly melancholy and affecting in the removal of one, who has passed the physical and moral perils of infancy and childhood—who has overcome the indolence of nature, and by labour stored the mind with knowledge—who has settled his principles of action upon the basis of morals and piety—and who, with every qualification for usefulness, has just entered upon the stage of life, and given the world a promise, and excited an expectation, which nothing but disease and death could destroy.

We have been led to this train of reflection by the melancholy and afflicting intelligence of the decease of Dr. EDWARD BARTON, a member of the medical profession of this city, who expired at Genoa, on the twenty-seventh day of December last.

Edward Barton was a native of England. He came to the United States, at an early period of life, under the immediate care and superintendence of the Abbé Tissezant, a French gentleman of uncommon attainments, exemplary piety, and of peculiar sweetness of manners and disposition. To the parental care of this accomplished scholar, Barton was indebted for an excellent foundation in classical learning, which was built upon with signal success. After the usual course of academic instruction, he passed some time, with great advantage to himself, and with usefulness to others, at the Roman Catholic College at Baltimore, where his classical education may be considered as having been completed.

His views, as related to the business of life, were directed to the profession of medicine. He spent some months at Hanover in New Hampshire, and attended a course of lecture delivered by Dr. Smith, now a distinguished professor in the medical College at New Haven. He came to Philadelphia, and as an immediate pupil of Dr. Physick, passed through the course of medical studies required by the University, and received his degree, with peculiar favour and approbation from his instructors. Soon after he graduated, Dr. Barton went to Europe, and devoted himself assiduously to the attainment of knowledge in his profession, by means of all the advantages, which he could command, in Great Britain and France. He returned to the United States in a few years, and settled in Philadelphia for the purpose of practising physic and surgery. With the aid afforded by the kind and friendly patronage of a gentleman, whose name is another name for benevolence, he was favourably introduced to this community—and by means of the most diligent study and attention, he formed himself to fulfil every expectation concerning him. His progress in the practice of his profession, though gradual, was such as convinced those who regarded him with kindness, that he was advancing with a certain march to distinction and usefulness. He had passed through the tedious and exhausting noviciate, which must be passed by every man of merit in his profession—and he was known with high esteem by the most eminent of his medical brethren, and with favour by a respectable portion of this community. At this moment, when it may with truth be said, that the hopes of many were fixed upon him, as calculated for signal usefulness—when he had already acquired something of the strength and confidence of success—and when his ambition was most ardent, and his prospects most flattering—it pleased God to visit him with a pulmonary affection, from which he and his friends apprehended his speedy dissolution. Under the advice of his friend and preceptor, Dr. Physick, he sailed from Philadelphia on the fourth day of August, 1821, for Lisbon—and from that port he went to Genoa, at which

place his eyes were closed in death, by the hands of strangers.

It is believed by the friend who writes these lines, that few young men have been removed by death, who were more entitled to be lamented, and whose loss could be regarded as more truly severe upon the community, than the subject of this notice. We do not undertake to speak from our own knowledge of his professional attainments—but we are authorized, from the known sentiments of those most competent to judge, to speak of them as uncommon for his period of life. We can speak, and with the deepest sincerity, of the manners and deportment of our friend in the chamber of disease—they were all that affection and feeling could require and prudence dictate. He was vigilant, tender, untiring and faithful to the last. His patients will readily assent to the truth of our assertion, that he never spared himself, or regarded himself as an object of thought, when his presence, his care, his watchings, could tend even to allay the anxiety of the sick. He visited, with equal fidelity to the patient, the abode of poverty and the mansion of the rich—and it may be affirmed, with justice, that he took peculiar pleasure in his ministrations to the lowly and the humble. His mind was of too lofty a character to suffer him to avail himself of adventitious circumstances, to obtain the favour of the community. He scorned even the appearance of seeking to win that favour by any other means than his merit—and though sometimes inclining to despondency, he confided, for ultimate success, in that just discrimination of talents, to which alone the professional man who has duly qualified himself for his business, can look, as the sure foundation of his hopes.

The friends of Dr. Barton only can speak of him in the character of a friend—and they, if they did justice to his memory, would probably incur the charge of extravagance. We will venture to assert, that the impressions which he made upon the hearts of those who were in the enjoyment of his friendship, will never be effaced.

It is most consoling to those who immediately feel the

loss of this young man—and must be grateful to all to whom it may be known, that in the latter stages of life, his impressions of the solemnity of the change which he was about to make, were deep and affecting. He was enabled to look back upon the toil and trials through which he had passed to the very verge of eminence and usefulness, without a pang of regret : he was enabled to contemplate the fading of earthly prospects and promises, with composure—because he was enabled to look forward to the scenes of an immortal existence, with hope and with joy. His friends have suffered a bitter loss : this community has suffered a loss—but he has, we humbly trust, made that exchange which is infinite gain.*

* We cannot let the above obituary notice, which has been executed by the hand of kindness, be committed to our pages, without bearing testimony to the truth and fidelity with which the character and attainments of our deceased friend have been delineated.

It was our good fortune very early to have become acquainted with Dr. Barton, and the relation of preceptor and pupil was soon ripened into the more intimate connexion of a cordial friendship. He was a man of no ordinary talents, highly cultivated by a liberal education—of great proficiency in his profession, and with that exquisite sense of honour which feels “a stain like a wound.” Deeply conversant with medical literature, he lent to this Journal his ready support, and contributed to it some of its most valuable articles. By the energies of a determined spirit, he pushed on “in sickness and in sorrow,” and though retarded by other trials and difficulties, had already won his way to a very enviable degree of eminence, when it pleased his God to dash the hopes of his friends and his own bright prospects, by the termination of his earthly career.

EDITOR.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

ANATOMY AND PHYSIOLOGY.

Size and Shape of the Globules of Blood in different Animals.

—A number of very interesting results have recently been obtained by J. L. PREVOST, M. D. and J. A. DUMAS, respecting the form of the globules of blood of different animals, and the effects of transfusing the blood of one animal into another. The following are their measures of the diameters of the globules :

Man, Dog, Rabbit, Pig, Hedgehog, } Guinea Pig, Muscarden, . . . }	$\frac{1}{3750}$ of an English inch.
Ass,	$\frac{1}{4175}$
Cat, Grey Mouse, White Mouse, . . .	$\frac{1}{4275}$
Sheep, Horse, Mule, Ox,	$\frac{1}{5000}$
Chamois, Stag,	$\frac{1}{5450}$
She-Goat,	$\frac{1}{7200}$

But, while the globules of blood in different animals vary in size, they vary also in form. In the mammalia they are all spherical, while in birds they are elliptical, and vary only in the lengths of their greater axes. They are likewise elliptical in all cold-blooded animals. They found, also, that the colourless globule which exists in the centre of the particles of blood, has the constant diameter of $\frac{1}{7300}$ of an inch in all animals, and whatever be the form of the globule which contains it,

In their experiments on the transfusion of blood, they obtained many interesting results. When animals were bled till they fainted, they died when they were left alone, or when water or serum of blood, at the temperature of 100 Fahr. was injected into their veins. If, on the contrary, the blood of an animal of the same species was injected, every portion of the blood thrown in reanimated the exhausted animal ; and, when it had received as much as it lost, it began to breathe freely, to take food, and was finally restored to perfect health. When the injected blood was from an animal of a different species, but whose globules had the same form, though a different size, the animal was only partially relieved, and could seldom be kept alive for more

than six days, the animal heat diminishing with remarkable rapidity. When the blood of an animal with spherical globules is injected into a bird, it usually dies under the most violent nervous affections, as if under the influence of the most intense poison; and this takes place even when only a small quantity of blood has been lost. In a great number of cases, cats and rabbits were restored for some days by the injection of the blood of cows and sheep, even when the injection of the blood was not made till twelve or even twenty-four hours after the blood was extracted from the latter. The blood was kept in a fluid state in a cool place, either by taking away a certain quantity of fibrine, or adding 1000th part of caustic soda. When the blood of the sheep was injected into ducks, they died after rapid and strong convulsions.—*Bibl. Univers.*

Communication between the Auricles of the Heart.—A preparation, in the possession of FOUQUIER, shows the existence of a free communication between the auricles, without having given rise to blueness of the skin; the patient having laboured under the usual symptoms of aneurism. The same practitioner has likewise shown that the *blue disease* may exist without any such communication. Thus he concludes that, although the organic lesion is often co-existent with this affection, they are not essentially dependent on each other.—*London Medical and Physical Journal.*

Instances of Children born without the Œsophagus.—A male child was born in August, 1820, at the full period of utero-gestation. It was of the full size, and took the breast with avidity; but each time the milk was immediately returned by the nose and mouth, with rattling in the throat, and symptoms of impending suffocation. It, however, lived in this state for eight days. During this time, the alvine and urinary secretions were regularly voided, although in smaller quantities. Derangement about the œsophagus was suspected, and in order to ascertain its nature, an inspection was instituted after death. *Dissection.* The liver was very large, and reached rather below the umbilicus, but its form and colour were natural. The stomach was without a cardiac orifice, and at this part was united to the diaphragm by means of cellular tissue. The lung on the right side was distended, and presented a reddish colour; that on the left was compact, and dark in its appearance, evincing that the child had only breathed with the right lung. The heart possessed its usual characters at that age. The œsophagus was entirely

wanting, and the pharynx formed a cul-de-sac at its inferior part.—*Hufeland's Journal*, 1821.

An instance entirely similar to the one just related, occurred some time since to Mr. Hallam, of Walworth. This child lived six or seven days. During that time, whatever was attempted to be given was returned in the manner already described. The alvine and urinary secretion were regularly voided, but in smaller quantity. On inspection, after the child's death, the œsophagus was found wanting, as in the case recorded by Hufeland. The pharynx and stomach, with the intervening parts, were preserved by Mr. Hallam, and are in the possession of Sir Astley Cooper.

These cases are interesting, chiefly on account of the regular appearance of alvine evacuations which occurred in them both. This circumstance furnishes a very conclusive proof, that at least the chief part of the intestinal excretions consists of secretions from the mucous surface of the digestive tube, especially from the follicular apparatus, and of the excrementitious parts of the hepatic and pancreatic secretions.—*Lond. Med. Repository*.

Report of Appearances on dissection of the body of Napoleon Bonaparte.—On a superficial view, the body appeared very fat, which state was confirmed by the first incision down its centre, where the fat was upwards of one inch and a half over the abdomen. On cutting through the cartilages of the ribs, and exposing the cavity of the thorax, a trifling adhesion of the left pleura was found to the pleura costalis. About three ounces of reddish fluid were contained in the left cavity, and nearly eight ounces in the right. The lungs were quite sound. The pericardium was natural, and contained about an ounce of fluid. The heart was of the natural size, but thickly covered with fat. The auricles and ventricles exhibited nothing extraordinary, except that the muscular part appeared rather paler than natural.

Upon opening the abdomen the omentum was found remarkably fat, and on exposing the stomach, that viscus was found the seat of extensive disease. Strong adhesion connected the whole superior surface, particularly about the pyloric extremity in the concave surface of the lobe of the liver; and in separating these, an ulcer, which penetrated the coats of the stomach, was discovered one inch from the pylorus, sufficient to allow the passage of the little finger. The internal surface of the stomach to nearly its whole extent was a mass of cancerous disease or scirrhus portion advancing to cancer; this was particularly noticed near the pylorus. The cardiac extremity, for a small

space near the termination of the œsophagus was the only part appearing in a healthy state. The stomach was found nearly filled with a large quantity of fluid resembling coffee grounds.

The convex surface of the left lobe of the liver adhered to the diaphragm. With exception to the adhesions occasioned by the disease in the stomach, no unhealthy appearance presented itself in the liver.

The remainder of the abdominal viscera were in a healthy state.

A slight peculiarity in the formation of the left kidney was observed,

(Signed) THOMAS SHORT,
ARCHIBALD ARNOTT,
Longwood, St. Helena, CHARLES MITCHEL,
May 6, 1821. FRANCIS BARTON,
MATT. LIVINGSTON.

Discovery of a Duct from the Ovary to the Vagina, in the Cow and Sow.—Some ancient anatomists believe that there were ducts leading from the ovaries to the uterus. The moderns have altogether denied their existence. Dr. Gärtner of Copenhagen has, however, ascertained their existence in the cow and the sow, and has had an honorary medal adjudged to him by the Danish Royal Society. He intends speedily to publish a description of it, with engravings.—*Edinburgh Medical and Surgical Journal.*

SURGERY.

*Cancer of the Lip.**—M. Richerand proposes (founded on experience) a new mode of extirpating cancers of the lips. It is needless to observe that the common method is to cut out a triangular piece of lip including the disease, and endeavour to unite the cut edges by means of pins or sutures. There is often considerable pain in the process of keeping the divided parts in contact, especially where a large portion of lip has been removed, and after all we cannot avoid deformity in many instances. M. Richerand now removes the carcinomatous portion of lip with scissors curved on their *flat* sides, and rather short in their blades. The operation is very quickly performed in this way; but it is in the after management that the novelty or improvement lies. Instead of bringing the parts in contact by pins or sutures, the bleeding vessels are tied, and a piece of agaric is laid on the raw surface, over which lint and a bandage

* Nouveau Procédé pour l'Extirpation des Cancers aux Levres. Par M. Richerand. *Annuaire Med. Chir.*

are placed. On removing the dressings the third or fourth day, suppuration will be found established in the wound; and from this time the mucous membrane of the mouth and the external skin of the lip daily approximate till, in ten or twelve days, they are united in a line, with scarcely any deformity—especially if care has been taken to cut out the piece in the form of a long crescent. M. Richerand called in, to witness the success of this operation, Drs. Beclard, Ribes, Breschet, and J. Cloquet, at the St. Louis Hospital. The patient was a female, and it was necessary to remove the whole of the under lip (j'avais enlevé la totalité de la lèvre inferieure) from one angle of the mouth to the other. Yet in this case the removal was scarcely perceptible in a fortnight. When the parts were first removed the aspect of the patient was hideous, and a person who had not known how far nature could operate in the production of lip, would have said that the patient would never afterwards be able to retain the saliva. In this case the lip was incised below the level of the floating portion—that is, below the angle which the mucous membrane makes in turning from the lip to go up on the gums. At every dressing the lip was seen more elevated, till at length it not only covered the gums, but rose above the level of the teeth. The patient perfectly recovered, and no deformity was the consequence.

We could not suppose that M. Richerand would deceive us, but when such men as Beclard and Breschet are witnesses of the fact, no rational doubt can be entertained.—*Medico-Chirurgical Review*.

Large Human Calculus.—A large human calculus has been described by Prof. CUMMING, of Cambridge: it weighs 32 ounces, and measures $15\frac{1}{2}$ inches in circumference. Its specific gravity, is 1.756. The nucleus is lithic acid, and to this succeeds a considerable portion of the oxalate of lime, then layers of the triple phosphate, covered by a thick coating of lithic acid, the external surface being composed principally of the fusible calculus. It is in the possession of Trinity College. A calculus is also noticed from the intestines of a hare: it is composed of vegetable matter and the phosphates.—*Journal of Sciences*.

Dr. Canella's Instrument for extirpating the Neck of the Uterus.—In 1818, M. Recamier invented a speculum uteri, for the purpose of examining the os uteri of a woman from whom M. M. Dupuytren, Dubois, Boyer and Pelletan had twice, in vain, removed a cancerous excrescence, by drawing down the uterus by means of forceps, and removing the tumour by curved

scissars.* This speculum uteri is in form a plain tube, with the end cut something like a pen or toothpick. With this instrument M. Recamier could see the disease of the os uteri, and he repeatedly applied caustic to it, although the latter was ultimately of no avail. Dupuytren added handles to this instrument, so that an assistant can hold it; and Dubois modified it by cutting away its upper part to permit his detecting and treating urinary fistulæ.

Dr. Canella has further added to this instrument an inner revolving tube, to which he fixes a knife, and also a pair of forceps, composed of two opposing hooks. He uses this instrument, which cannot be further explained without the help of a plate, by fixing the os uteri by means of the hook-forceps, and then cutting it off by a turn of his revolving knife.

Dr. Canella invented this instrument for use in the case of a female, in whom he had in vain tried to remove a cancerous tumor of the os uteri by means of caustic applied through M. Recamier's speculum: but the woman died, and he could only try it on the dead body, where he found that it answered perfectly.

Perhaps but few English women would submit to the use of the speculum uteri; otherwise we do not doubt its being a very useful instrument.

THEORY AND PRACTICE OF MEDICINE, AND MATERIA MEDICA.

Mr. Churchill "on the diverse Treatment of Gonorrhœa."—Astruc and earlier writers recommended mercury in some forms of gonorrhœa. Mr. Hunter disclaimed its use, but employed it sometimes. Swediaur did likewise. The present surgeons never use it, except the complaint be followed by secondary symptoms; and many not even then. Mr. Churchill is one of the latter.

Mr. C. further asks, what good can be attained by diuretics; and decides, that all causes of irritation are injurious. The only allowable diuretics, therefore, are diluents. The latter often give relief; and warm water is better than mucilages. Copaiba is very useful after the inflammatory symptoms have subsided. Mr. Gray says, in his supplement, that if thirty drops of elixir of vitriol be given twice a day, the stomach will bear as many as seventy or eighty minims of copaiba every night and morning. If the stomach be irritable, Mr. C. adds opium and liquor potassæ to the copaiba, as in the following prescription:

* Very little blood was lost in this operation.

R Mucil. acaciæ ℥iij.

Mellis — ℥iij.

Bals. copaibæ gtt. 40 ad 80.

Liq. potassæ ℥i.

Aquæ distil. ℥iv.

Tinct. opii gtt. xvi. M.umat quartam partem quater in die. Liquor potassæ is much recommended. So is cantharides in obstinate gleet, as in the following prescription:

R Pulv. cantharid.

Zinci sulph. aa gr. xv.

Terebinth. Chio. ℥i. M. fiat massa in pilulas xv. dividenda. Summet im. ter quaterve die.

Mr. C. then discusses the efficacy of cubebs; and, after stating what has been hitherto written on the subject, he says, that in his opinion it is not to be relied on; and moreover that it sometimes induces deep-seated headache, sometimes diarrhœa, sometimes pricking of the soles of the feet, and sometimes intense itching. In one case, he says, it produced a severe attack of febrile urticaria. But he says that his experience has not been extensive. His paper is to be continued.—*Medical Intelligencer*.

Sloughing Chancre.—A gentleman had a sloughing chancre—that is, a chancrous ulceration assuming a sloughing appearance, and rapidly spreading over the glans penis. In forty-eight hours one third of the glans was destroyed. Local bleeding, purging, fomentations, and the strictest antiphlogistic measures had no effect in arresting the alarming progress of the disease. An eminent physician saw the patient. He advised a rapid introduction of mercury, so as to bring on ptyalism as quickly as possible. By extensive frictions, the mouth was made sore in thirty-six hours. That instant the sloughing ulceration ceased, as if arrested by a charm. We know this treatment is not according to orthodox canons; but it has, since the above case, been tried in several others, and with similar success.—*Medico-Chirurgical Review*.

Ring-Worm.—In the Monthly Magazine for this month will be found a letter from Mr. T. I. GRAHAM, of Cheltenham, in which he states that he has known the “lime water procurable from gas works, and through which the gas has passed for the purpose of purification, perfectly successful in three cases of ring-worm. Two of these were unusually severe, the whole of

the scalp being covered with scabs and small deep ulcers. The water has a strong gaseous impregnation, and is most disgustingly fetid."—*London Medical and Physical Journal*.

The Croton Tiglium.—The root of this plant is considered, at Amboyna and Batavia, by the native doctors, to be a specific for dropsy. As much of its shavings or raspings as the finger and thumb will lift, is prescribed every morning in a little wine or arrack.—*Ainslie's Materia Medica of Hindostan*.

Dr. Richardson's Recommendation of the Climate of Egypt and Nubia in Pulmonic Diseases.—Nothing can exceed the beauty of the mornings and evenings in Nubia. The air is light and clear, and cool, and all the senses, as if bathed in the breath of heaven, cling with rapture to every blade of grass, or every opening plant. During the whole of yesterday the sky was without a cloud, and in the evening the constellations were particularly bright. All of us had seen the sky of Italy and Greece, but for brightness, the nocturnal sky of Egypt and Nubia surpasses them all, as much as they do that of England. Many a pulmonic patient, who feels his sickly fabric chilled and pierced by the snow-winds of Vesuvius, would be soothed and healed by the unirritating and balmy air of Egypt and Nubia. Nor is the distance so appalling: it only seems far to those who have not tried it. The traveller will go in a shorter time, and with less fatigue, from Marseilles to Alexandria in Egypt, than, at an average rate of travelling, he can go by land from Geneva to Naples. The accommodation is always good, and there is no chance of incurring fresh exacerbations of disease. All the way up the Nile he carries his house along with him, leaves it, and returns to it when he pleases. His mind is constantly engaged with the unremitting succession of new and interesting objects that occur in every step of his journey, and that without one single circumstance to discompose or annoy him. Every where he can purchase, at a moderate rate, such articles of provisions as are necessary for his comfort, excepting wine, and that he can easily carry with him from Alexandria and Cairo. His medicines he ought to take from London.—*Travels in Egypt and Palestine*, by Dr. Richardson, vol. i. p. 392.

The Epidemic Fever in Barcelona.—The medical commission sent from Paris to Barcelona, by the French minister, in order

to inquire into the nature, causes, and phenomena of the fever which ravaged that city, have arrived in Paris, and made their report. This commission was composed of the following physicians—MM. Bally, Francois, Mazet, Pariset, and Rochoux. They had all seen the fevers usually called the yellow fever, and had long since made up their minds as to the contagious or noncontagious nature of that disease. M. Rochoux asserted the latter character, and the other physicians were convinced of the former before they even saw the fever they were sent to examine into and report upon. Soon after their arrival at Barcelona, they were joined by other physicians—they quarrelled—one died—another fell ill of the disease—and, finally, they are now at variance respecting its nature.—*Lond. Med. Repos.*

Croup.—Dr. Reddelin, of Wismar, has communicated to the Royal Society of Gottingen, through Professor Blumenbach, the following successful treatment of croup, after the usual remedies had been tried without effect. The patient was a female, aged nineteen, who, on the third day after being seized with the croup, was unable to swallow, had begun to rattle in the throat, and seemed approaching rapidly her dissolution. Dr. Reddelin insinuated, by means of a quill, a mixture of Spanish snuff and marocco into her nostrils, and, after repeating this mixture a second time, it excited sneezing and vomiting: this occasioned the discharge of two long membranous cylinders from the trachea, upon which the rattling immediately ceased, and the patient was rescued from instantaneous suffocation. One of the tubes, when slit open, measured nine French lines in breadth; they were quite elastic, and bore a strong extension without injury to their fibrous texture.—*New Mon. Mag.*

M. Piédagnel has detailed the history of a case of neuralgia of the right infra-orbital nerve, which was cured by the sulphate of quinine. The subject of this case was a lady, aged twenty-nine years, of a lymphatic temperament. The paroxysms came on daily, about nine o'clock in the morning, and continued for two or three hours. M. Piédagnel did not see her until the ninth paroxysm. Compresses, dipped in sulphuric ether, sinapisms to the feet, and stimulating pediluvia, were made use of; and at the end of about two hours' perseverance in this means, or nearly three from the commencement of the paroxysm, she obtained relief. On the following day it did not return until half past eleven, but was more severe than ever. The same means were continued, with the addition of an antispasmodic potion. At

two, no relief had been obtained, when a grain of extract of gum opium was given, but without effect: this was repeated at three, in a double dose, and six leeches were applied upon the pained part, and the like number behind the ear of the same side. About four, the pain was considerably augmented, and was accompanied with delirium and slight convulsions. At five, she experienced a trifling amendment; and, at half past six, the paroxysm ceased. Finding that the disease continued to make progress, and recollecting that he had seen cases of neuralgia yield to the cinchona, M. Piédagnel determined, as this case was of an intermittent kind, to administer that medicine in a large dose. Ten grains of the sulphate of quinine were dissolved in equal portions of orange flower water and simple syrup; and a fourth part was directed to be taken at eleven, and repeated at midnight, and the remainder to be taken in two doses, at eight and nine in the morning: the result was, that she had no fresh accession. In the evening and next day, a similar potion was repeated, but containing only four grains of the sulphate of quinine. The patient was completely cured.—*Lond. Med. Repository.*

Utility of the Nicotiana Tabacum, in some cases of Phlegmasiæ, &c.—A strong woman had violent pneumonia; so that, after ninety-six ounces of blood had been abstracted at five bleedings, the breathing continued difficult to the greatest degree. A glyster of thirty-five grains of tobacco, infused for half an hour in twelve ounces of boiling water, produced immediate relief. She was sick after it; but in a few days she was well without further treatment.

In a case of cynanche tonsillaris, the patient, five years of age, and the bowels obstinately costive for three days, in spite of medicine, a "very weak" tobacco glyster was given. Sickness and four large fetid stools followed, and the boy was soon in health again.

A similar case follows, which was treated with similar success; the disease being pneumonia, with obstinate constipation. Patient three years of age.—*Medical Intel.*

Cubebs and Capivi.—We have found a combination of these two medicines very useful in the earliest stage of gonorrhœa. Say an ounce of the capivi and four drachms of the cubebs powder, in an eight ounce emulsion, to be taken in two days.—*Medico-Chirurgical Review.*

Pure Magnesia in Diabetes.—Dr. Trotter cures diabetes mellitus by pure magnesia, given in about the aggregate dose of ʒij . every day. Two cases are related, in which, on the third day, the thirst declined, the appetite became less voracious, the urine lessened in quantity, and became altered in quality, the bowels were profusely purged, and, what is more satisfactory, the patients recovered in a week or two. The diet was what is commonly used by the labouring classes. It seems that Dr. T. places much dependance on pure magnesia, as a remedy for diseases of the nervous temperament.—*Med. Intelligencer*.

The Oil of Turpentine rendered more palatable.—Dr. Nimmo employs the following method to purify the oil of turpentine, for medicinal use, “without diminishing its efficacy, but greatly lessening its disagreeable taste, and its injurious effects upon the kidneys.” To eight parts of the oil, add one part of the strongest alcohol, and let them be well agitated; in a few minutes a separation takes place; the oil, unless very impure, falls to the bottom, and the alcohol, having dissolved the impurities, floats at the top. Pour off the alcoholic portion, add an equal quantity of alcohol as before, agitate and separate the liquids. If this be repeated three or four times, the oil becomes nearly tasteless, almost without smell, and when a portion of it is evaporated, it leaves no residue. It is necessary to remark, that, pure as the oil may be rendered, it speedily undergoes alteration, and returns to its original state of greater or less impurity.
Lond. Med. Repository.

Case of Frontal Neuralgia, cured by the employment of the Arsenious Acid, internally.—Dr. Lalaurie, physician to the Central House of Correction, at Eysson, has published the history of a case of neuralgia, which originated in a puncture of a ramification of the frontal nerve; the disease had continued for a period of ten years, notwithstanding the use of several remedies. From the periodical nature of the disease, M. Lalaurie was induced to employ the arsenious acid, and with complete success. The patient was ordered to take, in the morning, the sixteenth part of a pilular mass, composed of a dram of white soap, and a grain of arsenious acid; drinking immediately afterwards three cups of water, containing mucilage and honey. This was repeated, every other day, for a fortnight, with complete success. A somewhat remarkable symptom in this case was, that his sight was much weakened; and, about sunrise and towards evening, the symptoms were so much aggravated, as to give rise to a sort of amaurosis, but which became gradually less towards the

middle of the day. This affection of the sight, which M. La-laurie considers to demonstrate the sympathy which exists between the ophthalmic nerve of Willis and the optic nerve, was observed at an early period, by medical writers, to follow supra-orbital wounds; as is exemplified by the following passage in the *Coact. Prænot.* of Hippocrates:—"At vulneribus, quæ in supercilium, aut paulò altius inferuntur, visûs acies obtunditur, et quò vulnus recentius est eò magis vident. Inveterascente autem, aut tardente cicatrice magis obtundi solet."—*Journal Complémentaire du Dictionnaire des Sciences Médicales*, Juin, 1822.

Great Obesity in a Child—In the general sitting of the *Académie Royal de Médecine* of Paris, on the 26th of February, a male child, aged five years, was presented to the *Académie*, which was so corpulent, as to be scarcely able to walk. Its stature was not higher than that of a child of the same age: it weighed *one hundred and eight pounds*.—*Revue Médicale*, Mars, 1822.

MIDWIFERY.

M. J. A. Lejumeau de Kergaradec has lately published a small memoir upon the application of auscultation to the study of pregnancy. By means of the *stethoscope* or *pectoriloque* of Laennec, he is of opinion, that the pulsation of the heart of the fœtus may be distinguished from those of the arteries of the mother; and that, by an attention to the different sounds communicated to the ear, we may determine, in doubtful cases, whether the fœtus in utero is alive or dead. MM. Kergaradec and Laennec are both of opinion, that the *stethoscope* and the immediate application of the ear, are attended with the same advantages; but M. Fodera considers, that although for the purposes of delicacy, the *stethoscope* may be sometimes preferred, yet that we may frequently be able to detect diseases by the immediate application of the ear, which we are not able to do with the *stethoscope*; and he consequently gives the preference to auscultation performed in that manner, in all cases where the *stethoscope* may be considered necessary.—*Lond. Med. Repository*.

Case of Pregnancy, with Scirrhus of the Uterus and left Ovary.—M. J. B. Gasc, Surgeon-Accoucheur at Tonneins, has related the case of a female, who, along with pregnancy, was labouring

under a considerable scirrhus of the uterus, as well as the left ovary: the latter lesion was to such an extent, as to occupy a considerable portion of the cavity of the pelvis, and to create very great obstacles to the delivery of the fœtus. By passing his hand along the side of the tumour, and towards its anterior and inferior part, he found the left knee of the fœtus, and brought down the leg; the tumour, however, prevented him from reaching the other extremity. By dint of patience and perseverance, the nates and right extremity were disengaged, and the rest of the body followed. Considerable difficulty was met with in extricating the shoulders; and M. Gasc observes, in consequence of the infant being dead and half putrified, notwithstanding every care in the attempts to extract the head, it separated from the neck; and "the orifice of the uterus, which, during labour, had descended a little, and approached the centre of the pelvis, resumed its former position, so that it was impossible to reach the head." Under this idea, M. Gasc made no attempt to extract it. Considerable hemorrhage ensued, and the patient died.

The body was opened in the presence of Dr. Pichausel, who had been called in, in consultation, during the *accouchement*.

The uterus was found scirrhus, and as voluminous in appearance as before the extraction of the body of the fœtus, only it seemed a little flattened in front. Its parietes were extremely thick and compact, and lardaceous. The left ovary was excessively large, and had the form of a gourd elongated, and a little contracted towards the middle, in such a manner, that the superior portion, which was larger, filled the whole of the left side of the belly, and the inferior and smaller portion the cavity of the pelvis; it was this latter which made the *accouchement* so laborious. The ovary, disengaged from its dependencies, weighed eight pounds.—*Revue Médicale, Avril, 1822.*

Case of Accouchement rendered laborious by the unequal contraction of the Uterus, and complicated with singular circumstances.—Dr. Alphonse Ménard has related a case of hourglass contraction of the uterus round the body of the child, complicated with some singular circumstances. After the head of the child was born, the attendants had made use of force sufficient to tear it from the body, and to break the ossa humeri in four or five places, and yet the uterus was so firmly contracted round the abdomen of the child, as not to admit of its extraction. By aid of long continued and laborious efforts, M. Ménard succeeded in producing the dilatation of the contracted portion, and the fœtus was expelled by the action of the uterus. A fresh

difficulty, however, ensued in the extraction of the placenta: the funis gave way about its middle, by a very slight traction. When the hand was again introduced into the uterus, it was found recontracted, and even with more firmness than at first; but, by a laborious and gradual effort at dilatation, the hand was again introduced into the second pouch, and the placenta extracted piece-meal, in consequence of its tearing at the slightest effort.—*Journal Complémentaire du Dictionnaire des Sciences Médicales, Juin, 1822.*

AMERICAN MEDICAL INTELLIGENCE.

A bark from a tree, the botanical history of which we have not ascertained, has been discovered in the state of Indiana, which, is said to evince extraordinary hydrogogue powers. We are informed by a gentleman who resided in Evansville last winter, that a physician of that place succeeded in curing five cases of dropsy with it, which had resisted other medicines, and that it is considered as a most valuable acquisition to the *materia medica*.

The bark is exhibited in decoction: an ounce and an half of it are put into two quarts of water, which is boiled down to one quart, of which the dose is a tumbler full, three or four times a day. In about thirty-six hours, it displays its hydrogogue effects, producing frequent watery alvine discharges.

In consequence of the preceding intelligence, Dr. Darrach of this city, was induced to try the bark, in the form above recommended, and the following is the result:

“The bark was employed at the request of Dr. Sandford, in the case of a coloured man of this city, who had been afflicted with ascites and anasarca eight months, during which time, he had been under medical treatment without any obvious benefit.

He is forty years of age, of a robust constitution, regular habits—his occupation a labourer in the brick-yards. Previous to his present complaint he enjoyed good health, except occasional attacks of rheumatism. He became my patient last September. The symptoms in his case have been from the commencement, such as are generally treated by antiphlogistic measures, and at times, those from accumulation of the fluid. Beside the antiphlogistic regimen, which was constantly attended to, with an occasional recurrence to blood letting, a fair trial was made of the supertart. potass and jalap—the croton oil—the parsley and the calomel and squills, which last combination was continued until salivation was induced. Tapping also was three times performed.

In this state of the case, we had recurrence to this new me-

dicine. After the administration of the third dose, the bowels were operated on—the discharge watery, though not so copious as we had anticipated. The day following the patient complained that the medicine disordered his stomach, and requested it to be omitted. Difficulty of breathing also, and lowness of spirits, and coldness of the extremities under which he previously laboured, dependent doubtless, on the distention of the abdomen, were aggravated. Tapping, however, removed all these symptoms—the stomach regained its strength, and the decoction was once more given, but less frequently and in somewhat smaller doses. It continued to act as a hydrogogue, but the evacuations, though as frequent as before, were far less copious. The swelling in the legs was obviously lessened the third day after the employment of this article, and on the sixth was entirely removed, and also, from the rest of the integuments. During this time, however, water accumulated in the abdomen, but far less rapidly than after the three previous tapplings. The patient again became exhausted and disordered by the medicine, which for the present was omitted. The quantity of urine voided was much less than before the administration of this medicine.

By this experiment, the statement, as to the hydrogogue property of the article, has, I think, on the whole been confirmed, though the discharges were found certainly less copious than in the cases reported from Evansville.

It also seems to debilitate the stomach, and when administered as frequently as has been directed exhausts the patient. Its tendency to check the flow of urine may be worthy of remark—it would likewise be interesting to know if its powers have not been greatest in cases of dropsy of the integuments.

W. D.

Prussiate of Iron.—This medicine has lately been much extolled by Dr. Zollickoffer, of Maryland, as a remedy in intermittent and remittent fevers. The substance of what he says with regard to it, is comprised in the following extract from his publication on the subject. By several of the practitioners of this city who have tried the medicine, very favourable reports are made of it. We have had ourselves no opportunities of testing its efficacy. But independently of other evidence, it comes recommended from a most respectable source, and certainly claims attention.—EDITOR.

The *Prussiate of iron* possesses the following advantages over the *cinchona officin.* as a remedy in intermitting and remitting fevers :

First.—It is void of taste, and may therefore be much more

readily exhibited, than the *pulv. cinch. offic.* which, to some, is extremely unpleasant.

Secondly.—It may be given in every stage of the disease; while the administration of bark is confined to the *apyrexia*.

Thirdly.—The dose is much smaller, being from four to six grains twice or thrice in twenty-four hours; or at morning, noon and at night: while bark, to be effectual, must be given in much larger doses.

Fourthly.—It never disagrees with the stomach, or creates nausea, even in the most irritable state of this *viscus*: while bark is not unfrequently rejected.

Fifthly.—In its effects as a remedy calculated to prevent the recurrence of future *paroxysms*, it is more certain, prompt and effectual than the justly celebrated *cort. peruvian*.

Sixthly and lastly.—A patient treated with this article will recover from the influence of intermitting and remitting fevers, in the generality of cases, in much less time than is usual in those cases in which bark is employed. In making use of the Prussiate of iron as a remedy in disease, care must be taken to select that which is of a very dark blue, approaching to a black, having a shining coppery fracture, and adhering firmly to the tongue.

UNIVERSITY OF PENNSYLVANIA.

The Medical Class at this early period of the session, already largely exceeds *four hundred*, and promises to be the most numerous ever known in the school.

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TO READERS AND CORRESPONDENTS.

1. WE wish it to be distinctly understood, that we neither have, nor will receive, any pecuniary compensation as Editor of this Journal. The motives which led us to engage in the enterprise, are announced in our prospectus, and will be found liberal, and wholly disinterested. To this subject attention is now called, with a request, that communications for the work, and all matters of correspondence relative to it, may be addressed to the publishers, Messrs. H. C. Carey and I. Lea, Booksellers, Philadelphia.

2. We have received several communications from our correspondents, which have been *crowded out* of our present number. This postponement in the publication, we hope, will not be construed into neglect. It is the very nature of a Journal, to be miscellaneous, and in order to secure variety, we are often compelled, in the arrangement of its contents, to keep back for a time, articles of merit, from their too close affinity to those previously selected.

3. The prospectus of the contemplated work of Professor Drake, of Cincinnati, has reached us, and we regret that it is not now, in our power to publish it. But it shall conspicuously appear in our next number. The enterprise which he meditates, is of unquestionable utility, and we know of no one more competent to execute it.

4. We learn from an official source, that the medical class in the Transylvania University, this season amounts to one hundred and seventy students. This is great success, on which, we most sincerely congratulate its diligent, learned, and able professors.

5. We are requested to announce, as nearly ready for the press, a translation and abridgment of the writings of the cele-

brated Broussais, by Dr. Joseph G. Nancrede of this city. This will be a very acceptable present to the medical public, and the acknowledged talents of Dr. Nancrede, give us an assurance that the work will be ably executed.

6. To an "*old graduate of the University of Pennsylvania,*" who has furnished us with a well written reply, to what he properly entitles a "*most wantonly indecent attack on his Alma Mater,*" we tender our acknowledgments. We must, however, decline its publication. The best defence of the school is to be found, in its continued and triumphant prosperity. While it boasts, amidst, in some instances, the most ungenerous competitions, an annual increase of its numbers, which, at this moment, nearly equal the aggregate classes of all the rival institutions of the country, it may silently rest in security on so solid a foundation. We need hardly remind our intelligent friend, that in this licentious age, *utter insignificance* affords the only protection against calumny and abuse. Excepting his *own pupils*, who attacks the PROFESSOR—from whom, it is said, this abortive effusion of malice and chagrin has issued.

THE
PHILADELPHIA JOURNAL
OF THE
MEDICAL AND PHYSICAL SCIENCES.

NOWHERE, perhaps, has the *Materia Medica*, for a long series of time, suffered more from the adulteration, the imperfect preparation, and in the general degeneracy of its articles, than in the United States. Carelessness, or ignorance, or fraud, had indeed, reached such an height in these respects, that a large number of the most useful medicines were either prescribed with distrust, or had utterly lost the confidence of physicians by the continued disappointment of their just expectations. This has been conspicuously the case with Peruvian bark, ipecacuanha, emetic tartar, calomel, ether, musk, the dulcified spirit of nitre, Hoffman's anodyne liquor, and many others that we have not space to enumerate, in which the quality of the article was originally bad, or rendered so by shameful sophistications, or from negligence, or want of pharmaceutical skill.

With a view to the correction of these flagrant abuses, the apothecaries and druggists of this city, in a highly laudable spirit, have instituted a college, which, we believe, will ultimately prove adequate to the purpose.

Two professorships are already established, one for the teaching of chemistry, and the other materia medica, and pharmacy, to which very eminent physicians have been ap-

pointed, who are peculiarly fitted by their previous studies and pursuits to convey instruction on their respective subjects. The first of these chairs is held by Dr. Wood, and the second by Dr. Jackson.

Nothing remains, so far as we are able to discern in the Constitution of the College, to accomplish the great end of its institution, than the delegation of a power of *superintendence*, or in other words, to invest a committee of their body with authority periodically to visit and to inspect the drugs, and the pharmaceutical processes, of the different shops. Without such a power, strictly exercised, we do apprehend, that the provisions of that instrument, which hold out the penalties of expulsion and degradation to members detected in *mal* practices, will not be found efficient, in securing, at least, the general and entire confidence which ought to be inspired. However averse it may be to the genius of our institutions, or to the freedom of our ordinary habits, such a regulation is still demanded, and we cannot perceive why it should be resisted by any one who has the "*mens conscia recti*," and fears not exposure. That such a measure will at no distant period, be adopted, we are persuaded,—and perhaps on the whole it may be best to leave to time and the influence of experience, to produce a conviction of its necessity.

The ensuing discourse, which was delivered by Dr. Jackson, at the opening of the session of the college in November last, as introductory to his lectures, we recommend to the attentive perusal of our readers, as well for the interesting matter it contains, as on account of the merit of the style.

EDITOR.

ART. I. *On the Condition of the Medicines of the United States; and the Means of their Reform.* An Introductory Lecture delivered in the Philadelphia College of Pharmacy. By SAMUEL JACKSON, M. D.

IT is in the power of no skill to arrive at perfection in every art—or of any genius to attain excellence in every science. The unregulated ambition, that would grasp the extent of

human acquirement, may, in the plenitude of success, accumulate a vast store: but, too unwieldy for useful employment—embarrassing by its magnitude—the stock of learning is not augmented or the circulation of knowledge enlarged.

Vain as must ever prove the attempt to master the wide circle of the sciences, no less hopeless will be the effort to excel in each of the departments, of which, collectively, an art or a science is formed. When has existed a genius so vast, an intellect so comprehensive? It is the boast of no age—in no period is it to be found: not in the splendid eras of Grecian or of Roman intellectual glory: not in the bright epochas of modern discoveries, refinement, and improvements. It is not rashness to pronounce that Homer, emphatically termed, “the Prince of Poets,” with all the sublimity of his conceptions, the harmony and majestic march of his verse, the fertility of his invention, and the truth and justness of his descriptions, never would have equalled the delicate wit, the inexpressible beauties and graces, that shine in the amorous odes of Anacreon.

The paintings of Michael Angelo, displaying, from the energy of his genius and imagination, the sublimity of the art, are deficient in the purity of taste, the correctness of design, the harmony of composition, that captivate in the productions of Raphaele, are wanting in the simple and pure grace of Correggio, and the brilliant colouring of Titian.

Though the corporeal and intellectual faculties are limited in their powers, yet, trained in one exercise, and concentrated on a single object, a degree of dexterity, and extent of cultivation may be acquired, that often seem scarcely within the limits of human capabilities.

To the division of labour, by which are separated the different parts of a work or fabric, and their execution is confided to one hand, are the mechanic and manufacturing arts indebted for the extraordinary perfection they have received in some of the populous regions of Asia, and the laborious and crowded communities of Europe.

To the same principles must the liberal arts and sciences owe their advancement and ultimate perfection. Composed

of many distinct and ramifying divisions, the separate cultivation of each, by numbers devoted to its improvement, can alone make known their facts, develop their principles, establish their laws.

With more propriety than any other science, medicine is to be regarded as an universe of sciences—an immense aggregate of subordinate systems. Each, notwithstanding, to a certain extent, maintains an independent existence—possesses its subservient sciences, peculiar principles, details, systems, and theories—the whole concomitating in the formation of the most magnificent structure, that has yet arisen from the intellectual labours of man.

However different and distant may be these various systems of systems from each other, they have mutual relations and connexions, gradations and dependencies—exercise a mutual action and influence—and in their collateral improvement, alone, can that great system, of which they constitute a part, attain its greatest excellence.

The retardations that have been experienced in the science of medicine, are attributable to two causes. The first, is the neglect of some of its branches, regarded as inferior in rank and importance. But such is their mutual dependence and connexion, that while the disjunction of one would destroy all, the neglect and deficiencies of a single though humble province, pervading the whole with a secret yet benumbing influence, has interrupted their uniform progression.

In the second place, it is the errors of practitioners in their professional pursuits, that have operated more to occasion the tardiness manifested in the science, than any difficulties inherent in itself, or obstacles that have opposed its progress. Too many, easily and culpably satisfied, are contented with the knowledge that barely enables them to prescribe for a patient. Others, with an indiscreet zeal, devote themselves to the prosecution of so many and such varying subjects, that their wasted strength can complete no permanent work. The few, who have wisely selected a particular department, as the field of their researches, discoveries, and

observations, are they, whom medicine acknowledges as its improvers, and regards as its benefactors.

The plan I advocate is the economy of the science. Like the division and diffusion of labour in manufacturing and mechanic industry, the cause of their improvements, and the true source of national wealth and individual prosperity, it is the only means, by which the vast resources of the medical science can be unfolded, its principles be perfected, and its important ends in the social system be accomplished.

Let not this view be treated with indifference or disdain, as contracted and narrow, by the inexperienced, youthful and ardent votary, just entering on his career, warm and enthusiastic in his adopted profession. He will learn, as his knowledge enlarges, that of the collateral branches of medicine, each affords an ample space for the constant employment of the most persevering industry—and offers a rich harvest of renown, in discoveries and improvements to be made, to gratify the aspirations of the most ambitious talent.

I wish, however, not to be misunderstood. In recommending some one division of the science of medicine as the subject of particular perquisition, observation, and meditation, I do not mean, that it should exclusively occupy attention. It should be the selected object, whose perfection is studiously sought. The related branches are not to be neglected; but, while we labour to improve and instruct in one department, at the same time we must inform and instruct ourselves of all, that in the others has been effected. This, indeed, is essential to success. The addition of light to one of the medical sciences, reflects a ray on all—and the light of all, must be concentrated on one, thoroughly to illuminate it.

To be more explicit: if pharmacology be the science we would wish to cultivate and improve, a general knowledge of botany, chemistry, anatomy, physiology, pathology, therapeutics, and even the theory and practice of medicine, is indispensable to a complete acquaintance, in all its aspects, with a remedial agent. Without this information, its natural history cannot be properly known, or its preparations

be attempted : its effects, *modus operandi*, tissues on which its action is displayed, the medications it operates, the diseases to which it is adapted, and the time, and manner of its administration, cannot be adequately comprehended. To pharmacology, therefore, when it is the subject of investigation, its collateral branches in medicine are auxiliary, and even subordinate.

It is to be remembered, however, that the theory and practice of medicine, hold all the other divisions in a subordinate rank. To render them certain, that *they* may be established on immutable principles, that *their* indications, characterised with certainty, in the treatment of diseases, may be fulfilled and made effectual, is the end of all our labours, is the intention of the cultivation of the various departments of medicine.

The theory and practice of medicine, derived from observation, experience and deduction, are, in character, eminently intellectual. The appanage of the truly accomplished physician—they can only be happily pursued and advanced by a rare combination of brilliant and solid endowments, united to extensive acquirements. Illustrated by genius, and the concentrating light of a multifarious but selected knowledge, they culminate in the region of the medical sciences, diffusing throughout the wide circle their own splendour, preserving each, and consolidating all in the harmonious order of a perfect system.

That department which will occupy principally this course of lectures, is Pharmacology. This branch of medical studies, has been almost entirely neglected in the United States. It has been comprehended by none of our schools in the course of their instruction, and, until the College of Pharmacy was instituted in this city, there was no establishment dedicated exclusively to its cultivation.

No one, who reflects on the subject, can question the importance of pharmacological knowledge, in the completion of a medical education. Of what utility are theories the best conceived, and practical precepts of demonstrated correctness, without efficient medicinal remedies and preparations, to carry them into operation? Of what avail are

talents of the highest order, and erudition the most profound, to a practitioner, who is furnished with unfaithful remedies, and knows not how to distinguish them. A knowledge of Pharmacology is, then, as indispensable to the practitioner, as that of any other department of medical science. The judicious and learned Dr. Quincy, speaking on this subject, makes the following apposite remarks. "One might venture to maintain," he observes, "that a physician unacquainted with the rules of pharmacy, is more ridiculous and absurd, than that poet, who is ignorant of order, measure, and the harmony of numbers. A physician without skill in pharmacy, implies a contradiction—it is to say a man can cure a disease, who is unprovided of the means. Such a physician is like what a painter would be, without knowing the use of light and shade, pencil and colours."

It is not my intention to insist, that it is the duty of every practitioner of medicine to engage absolutely in the practice of pharmacy. That is the proper business of the apothecary, to whom it is to be confided. But every physician should be as well acquainted with the exterior characters and sensible properties of medicines, their active principles, the formulæ best adapted to their exhibition, and to display their powers, their various preparations, and the mode in which those preparations are made, as he must be with their doses and medicinal properties. The physician deficient in these respects, I do not hesitate to affirm, cannot render justice to himself or to his patients. His reputation and their lives, he abandons to his druggist or apothecary, who, from being governed most generally by commercial views and principles in his business, cannot feel the same immediate and delicate responsibility attached to his conduct, as that which presses on the medical practitioner.

The disunion of pharmacology and a practical knowledge of medicines, from the circle of medical studies, has been productive of many injurious consequences to the medical science of the United States. The physician, accomplished in other respects, is, too frequently, ignorant of the first rudiments of his profession. He may be well instructed in

the principles of therapeutics and of pathology, he may be perfectly familiar with the symptoms of a disease, and the remedies indicated for its treatment, but he knows not the instrument he is to employ : he is uninformed of its characters, he cannot diversify its form, so as to adapt it to the varying state of his patient, to the idiosyncrasy, habits, or difficult palates of the sick : he is incapable of determining, whether the medicine he prescribes is of good or bad quality, properly prepared, is active or effete.

To these very serious deficiencies, and as a consequence of them, may be added, the contempt it is too much the fashion to express for the copious treasures of a well cultivated pharmacy, and the resources of an abounding *materia medica*. This affectation of simplicity in practice, is often a cover for ignorance, exposes the want of experience, and the absence of a well stored armory of efficient means. I assert with confidence, that the physician, who limits his remedial resources to a few active medicines, a doctrine and practice too prevalent amongst us, must be a bad practitioner. This method may succeed in the simple acute diseases, but, in the complications of acute affections, that are so common and in the chronic disorders, obscure in their symptoms and causes, which, in civilized life afflict so large a portion of the community, and prove so frequently rebellious to most plans of treatment, it is a method that will be found in most instances wholly unsuccessful. It is this vaunted simplicity of prescription, that often enables the empiric to boast of his triumphs over the profession, and put it to the blush, by healing affections that have resisted regular treatment, and have been pronounced and abandoned as irrecoverable. The boasted secret is the employment of a well known formula, from which our modern physicians, priding themselves on their superior refinement, turn with disdain, as a useless farrago and relic of polypharmacy. It would be injustice not to acknowledge, that this too common error has been resisted and very ably combated by the Professor of the theory and practice of medicine in the University of Pennsylvania, in the very valuable work on therapeutics, with which he

has enriched the science, and added to the literary reputation of our country.

The medical profession have to charge themselves with another consequence, arising from their neglect of pharmacological knowledge, of wide and extensive mischief. I allude to the abasement of the drugs and medicines of this country. The great body of practitioners, especially those residing in the country, knowing medicines only by their names, have been ignorant of the very different qualities subsisting amongst them. In their purchases, incapable of making an election as to quality, the lowest in price was preferred. Inferior, deteriorated, and sophisticated medicines and drugs, met with a ready sale, while the choicest and most select, because of higher price, could very seldom meet with a purchaser. The drug market of the United States has, in consequence, become opened to the refuse of every other, and nothing is received so vile in character, provided it has the name and some resemblance to a medicine, but will find a sale. For this abuse, the apothecaries and druggists are not to be, at least exclusively, censured. The character of a business, as it respects the qualities of its articles, is determined by the consumers. If they are familiar with what they buy, particular in their selection, and will uniformly reject what, the very terms of the sale, would then inform them must be inferior or adulterated, such qualities would soon be banished from the market.

Whilst medicines continue to be known by their names only, and not by an attentive study of their commercial varieties, and the cheapest are preferred—whilst the prices offered, in a higgling bargain, are but half or a third, at which the superior kinds can be imported or prepared, it is to be expected, that the seller will be forced to deal in the inferior articles, or reduce the quality to the standard of the buyer. I have known a physician of great repute in an adjoining state, purchase in preference ipecacuanha, though assured it was adulterated, because its price was a third of that which was warranted genuine.

As respects its drugs and medicines, this country, for the last thirty years, has been retrograding, rather than advancing. Abandoned by the physicians, pharmacology, has not been prosecuted as a science by the druggists and apothecaries—no means of instruction were provided for these last—no rules, no regulations established for their government, in order to insure a correct dispensation of medicines of the most approved and genuine qualities. Individuals engaged in the vocation of an apothecary and druggist without a previous acquaintance with medicines, ignorant of their properties, unconscious of their own responsibility, and of the fatal evils that might result from their conduct. Anxious to transact business, they have sought to attract customers by the lowness of their prices. Their success compelled others to come down to the same standard—and thus, by successive competitions, our drugs and medicines are cheaper than those of Europe, but are deteriorated in the same proportion. Many of the articles that are constantly sold in the shops of this country as of the best quality, would, in Europe, be instantly destroyed by the inspectors of medicines, if found in any apothecary's establishment.

I have frequently made the assertion, the result of a deliberate conviction and extensive opportunity to form an opinion, and which I now repeat, that there are annually sacrificed in the United States, many hundred lives, from the ignorance of physicians in pharmacological science, and the cupidity of druggists, owing to which, inert and sophisticated medicines are frequently administered to the sick. Nothing is so dear as cheap medicines—they cost not money, but life. Let every physician distrust them.

This unfavourable, though, I feel confident, faithful and candid exposition, has been presented, not to mortify pride, but to point out defects to be remedied, evils to be corrected, duties to be performed. To make them known, will be, I cannot but flatter myself, sufficient to excite in both professions, a zealous emulation for their performance,

and to perfect a reformation, become of imperative necessity.

It is proper, after these general observations on the state of pharmacology in this country, that the boundaries and objects of this science should be defined.

Pharmacology is occupied in the consideration of medicines, their physical, chemical, and remedial properties—the vegetable, mineral, and animal substances from which they are procured—the various and best preparations and forms that may be given to them, in order to adapt them for administration to the sick, and the nature of the actions they excite in the living organized system. From this view, it is seen, that pharmacology claims a more extensive field of inquiry, and offers pretensions of a more lofty character, than its coadjutant branch, *materia medica*. This last, is more properly confined to discussions on medicines, their properties, operations, and the morbid affections in which they may be usefully employed.

Nature rarely presents to us medicines in a state fitted for use—or, in which, we can avail ourselves of their virtues, with the greatest effect. Most generally they are concealed in her productions, which serve for their composition and confection, and are to be separated by the analytical processes of the chemic and pharmaceutic arts.

Medicines being derived from different natural objects, in order to know and distinguish these—and to be able to assign to each its determinate arrangement and location, a knowledge of natural history is rendered necessary to become a complete pharmacologist. It is not intended to insist, that the pharmacologist should be a profound and accomplished naturalist—that he should plunge into the immense details of natural science. That would be to forsake his own peculiar department. Yet, he should be familiar with the elements of those branches of natural history, connected with his own pursuits—understand their classification, and be enabled to recognize and determine the characters of the natural productions, that furnish our medicines—and to set-

tle their relative connexion and situation, with respect to other natural objects.

Natural history imparts to the pharmacologist, a knowledge of the exterior attributes and properties, the correct designation, the positive and relative position, in the scale of creation, of the objects of his research. Its subsidiary assistance has this extent. With the acquirement of this information, a small progress only has been made to an acquaintance with a medicinal substance. Concealed in secret combinations are various principles, that imparting peculiar properties, are only to be discovered by chemical decompositions. Chemistry is, then, indispensable in pharmacological researches—and the two sciences mingle and embrace in the most intimate and inseparable alliance.

A medicinal substance, as an object of natural history and chemistry, having been examined and determined, it is next to be considered as a medicine. For this purpose, it is to be followed to the laboratory of the pharmacist. There, subjected to the multiplied operations of siccation, pulverisation, infusion, decoction, evaporation, distillation, &c., it is brought into that state, when it is properly termed a medicine—when its active powers are concentrated and developed—and it is prepared to produce in the system, its peculiar medications. The previous researches have been confined to, and have regarded the substance from which a medicine or remedial agent is extracted. This new product becomes the subject of new inquiries. Its physical characters—colour, consistence, odour, taste—its chemical composition, that revealing its constituents, disclose the essential principles of its virtues, are to be ascertained, and are new objects of examination. When these investigations are completed, it is then, only, that a knowledge of a medicine has been acquired: still the labours of the pharmacologist have not terminated. All that has been accomplished, is but proemial to the principal end of pharmacological science. The effects a medicine is capable of occasioning in the living organized system, or, in other

words, the medications it produces, are to be next appreciated.

In this inquiry, the higher departments of medicine, either immediately necessary for its clear exposition, or connected with it by intimate relations, are to be consulted, as accessory sources of information. To possess a distinct comprehension of the operations induced by medicines on the animal economy, we must be well versed in the knowledge of the various tissues, systems, and their functions, each affected by particular remedies—and, to form consistent speculations on the curative influences of medicines, essential to their systematic combination, considerations of a pathological and therapeutic nature are deeply involved.

In presenting the various topics I consider to be included in pharmacology, I offer a compend of this course of lectures, in which those subjects, as connected with each article, and when they do not interfere with the department of my colleague, will be embraced. Specimens of the various medicines will be produced, illustrative of their descriptions, that they may be known, not only as delineated in books, where we too often see them as they should be rather than as they are, but as existing in commerce.

The rapid sketch that has been given of the outlines of pharmacology, renders very striking and obvious two natural and prominent divisions into which it separates. The one comprises medicinal substances, the modes by which the medicines they yield are to be obtained and prepared, and the characters of those medicines. This may be denominated the pharmaceutic division. The other comprehends the consideration of the active properties of medicines, the peculiar actions or medications they excite, or particular tissues they affect in the living system; as well as the diseases, for the cure of which they are most successfully prescribed. This division may with propriety be considered as medical or therapeutic.

The first appertains almost exclusively to the especial pur-

suits of the apothecary. To him can most safely be intrusted its cultivation, who must feel the strongest incentives to labour in its melioration—incentives arising from the pleasure an intelligent mind receives from useful exertions, from the prospects of fame and of lucrative rewards in his business, that must result from his improvements and discoveries.

But while the physician, that he may concentrate his mind on the more immediate course of his profession, abandons all pretensions to an active agency in the interests of pharmacy, and resigns them to the protection of the apothecary, he is not to suppose himself entirely released from all attention to its condition. It is for his instruction and advantage the apothecary toils in his laboratory, giving abundance and selection to his remedial means, variety to his resources, and furnishing him, in his conflicts with diseases, appropriate remedies to meet each varying form of morbid derangement. What physician, capable of duly estimating his duties, can possibly neglect to profit by these advantages—how can he stultify and disable himself by inattention to that knowledge, which gives activity and power to all his other acquisitions?

In the United States, pharmacology is a new science. Long repudiated from medical instruction, too feeble to assert its claims, neglected and almost forgotten by its more brilliant sister sciences, it has pined in obscurity and penury. This reproach and stain on the medicine of our country is soon to be effaced. The deserted but legitimate offspring of the sciences, has found a shelter in these walls—protectors in the liberal and enlightened individuals, who, with disinterested views, have founded this institution. Fostered by their protecting care, it will go forth with all its developments complete—with augmented vigour, extending the circle of useful knowledge, giving abundance where there is now want, richness where there is poverty, variety where there is scarcity, and elegance to what is defective and disgusting.

It is with no little feeling of gratification and pride, I reflect, that it is this city, to whose active spirit, noiseless, yet stirring in all useful, liberal, scientific, and philanthropic objects, our country must acknowledge itself indebted for as substantial a benefit as can be conferred by science, in reforming the abuses of its pharmacy. This great and important undertaking was due to Philadelphia. Here have flourished a Morgan, a Shippen, a Wistar, a Kuhn, a Rush, a Barton, so many fathers of our medicine—here was first erected the altar, and kindled the flame of medical science in this land, from which has continued to emanate with increasing splendour, a stream of light, penetrating to the distant south, and overspreading the wilds of the remotest west: it was here, where the science itself was cradled, that should be restored to it, this long neglected, yet most practical of its branches.

The serious and extensive evils that a neglect of pharmacology occasions, have been partly exposed. It would be needless to enlarge farther on this subject, to persuade you of what only requires to be mentioned, to carry conviction to every mind. It is more important to consider the means, by which, in the most prompt and happy manner, the profession of the apothecary, clothed with greater science, may be elevated, and by giving to its details, fixed principles and established regulations, render the responsibility attached to it, effectually operative. In a subsequent lecture, when I shall trace through the eras of medical science, the state of pharmacological knowledge, will be described the various plans adopted for this purpose in Europe. It is sufficient on the present occasion to know them, as consisting of instruction, inspection, and coercion. They are all of governmental origin, and their sanctions are supported and enforced by the arm of arbitrary power.

The genius of our political institutions forbid, in this country, their imitation and adoption. In those social regulations, involving the occupations of the citizen, government, with us, is seldom seen or felt. It carefully abstains from all interference, submitting to the good sense, in-

telligence, moral principles and feelings of the people, those arrangements, that may be required by the general welfare, yet often clash with private interests and concerns. This is not the place to descant on the good or ill effects of this system. Under its ascendancy, it must be apparent, that institutions of the nature that have been mentioned, can only be supported by the influences of public opinion, co-operating with individual interests. It is these alone, that can impart the authority to make the laws that may be required, and to give them potency—and, it is from these principles alone, this College can derive the energy necessary to the enforcement of its statutes, and the happy issue of that enterprise it has undertaken to achieve for the public benefit.

The apothecaries and druggists of this city, with singular unanimity, zeal, and liberal feelings, have been the first to warn of danger, and to enter heartily into preparation. They have done their duty. It now remains for the public, and particularly the medical profession, to do their's—and, by their concurring aid, strengthen what has been accomplished, and confer the power to finish what has been so well begun.

In establishing the College of Pharmacy, the apothecaries and druggists have provided the means of instruction for their apprentices, and those who are desirous of informing themselves in pharmacological and pharmaceutic knowledge: they have voluntarily subjected themselves to rules and regulations, which they have invigorated by attaching to their violation the penalty of expulsion and consequent disgrace—they are about to stimulate to new exertions for improvements, by the offer of medals and rewards—what more could be expected from the most enlightened, the most liberal, the most philanthropic?

The ultimate success of this new institution, must rest with the public, and the physicians of the city and country. It must look to their patronage to crown its efforts.—A determination on their part to limit all their business to the members of the College—to send prescriptions and purchase

their supplies of those only, who have made themselves amenable to its laws, and act under its supervision and warranty, is all that is requisite to perfect the only plan, by which, in this country, the secret and hidden dangers of an unregulated and neglected pharmacy can be avoided. It is the vital spring that will give energy, movement, power, action, permanency to the whole machine. A member of the college is not only under the common influence of conscientious motives, and a regard to his character, but he is under the government of artificial restraints. Liable to an accusation and trial for unfaithfulness in his business, expulsion would destroy his prospects, if the suggestion I recommend was generally adopted. Few would then hazard this danger, and the physician and patient could both rely on the exact observance of a prescription, on the purity and good quality of the medicine administered or purchased.

The duties assumed by the College are arduous and important. They require for consummation the perseverance and zeal inspired by a consciousness of the meritorious nature of its engagements, and the extended benefits it promises to society. It is scarcely to be presumed, that the medical profession, deeply interested in the attainment of the objects of the College—a reform in our medicines—will withhold their assistance to effectuate so desirable an operation. They will not surely incur the deep reproach and lasting shame they would certainly merit, did they suffer the present scheme to fail through want of their concurrence. Such a result might be apprehended, should they look on this laudable attempt with coldness and indifference, had we not an assurance from the ardent zeal manifested in the cause, the sacrifices made, the many difficulties that have been overcome, prejudices satisfied, sordid calculations of a false interest resisted, that the establishment of the Philadelphia College of Pharmacy is already consecrated in the medical annals of our country. It may be chilled for a time by neglect—but, there is inherent in it, a vital heat that will not permit it to perish. The design it offers is so com-

mendable, the advantages it presents are so apparent and of so great moment—its efficiency to achieve the great objects of its undertaking is so unquestionable, that all who have an interest in the improvement of the healing art, and in human happiness, and what physician will dare disclaim these motives, must unite ardently, zealously in its support. Though its progress may be delayed, its success is certain.

ART. II. *An Essay on Aneurism of the Heart. Read before the Medical Society of New Jersey, at New Brunswick, May 8th, 1821, By WILLIAM G. REYNOLDS, M. D., Middletown Point, New Jersey, (and published by their direction.)*

IT comports neither with the design nor limits of this paper, to exhibit a detailed history of the heart, or the dismal train of evils which such a history would furnish. I shall only claim attention to a few striking peculiarities in the condition of this organ, for the better illustration of the disease under consideration.

The arduous and incessant duty of the heart, the indispensability of its action in evolving the phenomena of life, from its earliest, down to its latest moment—its great susceptibility to moral impressions, together with its influence over the whole system, under every varying shape of it, are points claiming our strictest observance in the contemplation of its diseases.

To understand the diseases of the heart, we must study its mechanism and laws—its morbid, as well as healthy actions, its inherent or acquired aptitude to moral influence, and that endless variety of impressions, which disturb its equable action, through the medium of irritation, sensation, and association.

Though an accurate knowledge of the anatomy of the heart be essential to correct and useful examinations of the organ after death, it will avail us little during life. It is from physiology we are to expect this important qualification. It is not enough that we are acquainted with the shape, number of ventricles, auricles, valves, and other features in the structure of the organ, or the whole mechanism of the human body. We must animate it by thought, and with the eye of our mind, view the relative effects and dependencies of the different parts upon each other. We must, in short, study the living man, and constantly compare those sensible and peculiar phenomena, of the health and life of the organs, with those which each of them presents in its lesion.

“Every man,” says Corvissart, “must be, to the real physician, a moveable picture, ever occurring to his observation. He must sedulously apply himself to the physical and moral man, and (except the bond which unites this double being, and which has forever been concealed from the human eye) the physician must perceive the most delicate influence of the reciprocal action of the one over the other. In fact,” says he, “that is the greatest physician who is the most profound in thought, as he will see, with a better eye, the nicest phenomena of life, and predict more remotely, the kind of disease which threatens an individual.”

To establish a habit of distinguishing diseases, by peculiar signs, and constant symptoms, is a correct and necessary rule of practice. But the motions of the heart being beyond the reach of our senses, it is impossible, in all cases, to determine, in due time, the nature and extent of the injury produced in the organ, by the marked irregularity of its motions. The neighbouring parts, under the direct influence of the heart, are ever liable to participate in its diseases, and the symptoms evinced in this participation, cause them to be mistaken for the primary affection. Thus a class of diseases, formidable in their nature, exten-

sive in variety, and frequent in their occurrence, are overlooked, for want of unequivocal signs, by which the internal action of each organ may be determined, without confounding it with that of another—a want of attention to the sensible phenomena of the action of the respective parts, or from deficiency of due physiological discernment:—and thus, too, the bills of mortality are swelled, under the imputation of dropsy, asthma, hysteria, and spasm, while an organic lesion of the heart, the frequent prototype, or precursor, of each of these diseases, lurks, unsuspected, under the specious appearance of their respective symptoms.

The heart may be ruptured by external violence, or the undue force of its muscular tissue: this is susceptible of proof both by induction and dissection. The most authentic histories of the diseases of this organ, furnish instances where the *columnæ carneæ*, on examination, were found torn from their attachments to the parietes of the ventricles—others, where the valves, or rather the *chordæ tendineæ*, which attach them to the fleshy columns of the ventricles, had these attachments torn loose—and again, where the walls of the auricles were so attenuated, and weakened by distention, as to be unable to bear the weight of the heart without tearing.

The celebrated Keill has calculated the velocity of the blood, through the aorta, at 156 feet in a minute—and that the heart exerts, in its contractions, a force equal to eight, or at the utmost ratio of the calculation, not more than sixteen ounces. Now, if these be the limits of its power in health, it is pretty certain that a triple or quadruple augmentation of this power, will obtain in the extremes of morbid excitement, and the force be increased to forty-eight or sixty-four ounces: a weight quite too great for the attachments of the *chordæ tendineæ*, the valvular membranes or attenuated auricles, to support for a moment.

In a well formed circulating system, equable action will result from a due ratio between the distending force of the blood, and resisting power of the heart—and continue as

long as this condition remains unbroken. But admit the influence of any powerful excitant, and the equilibrium is destroyed, the action increased, and the laws of the circulation deranged. The increased action will furnish more blood to the arteries, in a given time, than they can receive—hence it will react upon the impulsive organ, and tend to dilate the cavities, and elongate the fibres. Or suppose a deficiency of calibre in the arteries—this obstacle to the free egress of the blood from the ventricles, would induce perpetual re-action:—the coronary arteries and capillaries of the heart, would be distended, and supply more nourishment to its fleshy substance, and preternatural growth be the inevitable consequence of this deficiency, without the co-operation of any other cause.

Let us turn for a moment to the *living* picture of Corvisart, and view in imagination, the whole machine in easy motion. Then let the diaphragm, intercostal, and other muscles employed in respiration, assume a state of tension, or that state of the body be produced which exists in violent straining, coughing, laughing, shouting, wind-instrument playing, &c.—and an obstruction to the free passage of the blood through the lungs, and re-action on the right ventricle are immediately presented to our view. These states of the body, incessantly recurring, will sap the integrity of the muscular fibres of the ventricle, and ultimately produce dilatation, with derangement in the economy of the whole organ. Nearly every action and position of the body, and every undue emotion of the mind, are inevitably felt by the heart, and furnish a countless number of excitants to morbid, or impediments to healthy action. A vigorous organ will successfully resist many of these, to which one of more feeble construction would soon yield. But the stoutest heart could not perhaps, in any case, hold out uninjured, against a joint combination, or continual application of them. By an attentive contemplation of this moving picture, we are enabled to perceive a fearful liability to diseases of the heart, arising from the very constitution of our nature—from the slightest departure from a relative harmo-

ny in the structure of the parts, composing the circulatory system, and the causes which give it impulse—from too lively a state of the moral affections—the accidental employment—acquired habits, and varied attitudes of the body—and above all, the ignorance in the mass of mankind, of the number, the danger, and the mode of obviating these liabilities or causes.

Great numbers of mankind are successively brought into existence, so imperfectly endowed, both in body and spirit, as necessarily to forbid their surviving through the ordinary period of human life: and to these may be added, a countless number of all grades of society, whose passions, habits, propensities and professions, inevitably and unwarily induce disease of the organs. In those whom nature has doomed to an early end, it would be unjust to expect much aid from the healing art—and little better is the prospect it holds out to the subjects of a general depravation. In the ailments of this vast multitude of ill organized beings, nay, in the dark catalogue of diseases which hang over the destiny of our race, there is perhaps not one which affords a broader outlet to human life, than that which presents itself under the form of organic lesions of the heart. “Whence,” asks a great physiologist, “arises the frequency of this form of disease? From numerous causes, doubtless—but from two principal ones, the action of the organ, and the passions of men.”

This mode of contemplating the heart, and its relations, will induct us to a knowledge of its aptitude to disease, and present to our conception, the extensive train of maladies, necessarily resulting from the derangement of its economy. To qualify us for the prompt detection, and best possible management of this recondite class of diseases, much time, and attentive observation will be required—and if with these advantages, the wise, reflecting physician, feels much doubt and embarrassment, in encountering them, what must be the case with the young and inexperienced practitioner, who has perhaps never given the subject a single thought, and who knows little more of the heart than

that it is a hollow muscle connected with the circulating system.

In alluding to our general ignorance of the diseases of the heart, I mean not to cast a censure on the profession. I am aware of the many difficulties opposed to free inquiry in this department of practice. The strong prejudices against opening dead bodies, the laborious duties of a country practitioner—his frequent indispensable engagements, the distance to travel, and the want of suitable apartments among the lower orders of society, will ever oppose obstacles to our examinations, which the most unwearied industry will be able to surmount but in a partial degree—and which will unceasingly retard our progress in the knowledge of internal diseases.

The subject proposed I shall treat under three general specifications. 1st. The causes. 2d. The symptoms. 3d. The cure of aneurism of the heart. And, first, of the causes. They are innumerable, and may be presented under a variety of arrangements. I have chosen that which I conceive, in point of brevity and perspicuity, best adapted to the present essay—and I shall class them under the general heads of physical, and moral. No cause can possibly exist, that is not derived from one or both of these sources. To attempt an enumeration of all the physical influences, producing morbid action, or organic lesion of the heart, would be an useless employment of time. I shall notice a few only of those which are the most frequent precursors of its diseases. Of these, are all obstructions in the mouths of the arteries, or more distant points of the circulation, preventing the free ejection of blood from the ventricles—as polypi, in or near the aortic, or pulmonary mouths of the arteries—deficiency in the relative size of the calibres of these vessels, to the cavities of the ventricles—scirrhusities in the liver, mesentery, &c.—inhalation of noxious vapours, as carbonic acid, &c. preventing the free expansion of the lungs, and the discharge of the necessary quantity of abraded, or worn out carbon from the blood, and the supply of oxygen thereto—violent blows about the region of the heart

—straining, vaulting, running, use of wind-instruments, or whatever motion of the body tends to increase, or obstruct the action of the heart—a want of due relation between the energy of the fibres of the heart, and the distending force of the blood—frequent or ill cured peripneumonia, or pleuritic affections, &c. Certain employments which require a fixed or curved attitude of the body, become powerful excitants to aneurismal affections of the heart—such as those of tailors and shoemakers, and also curriers, by pressing the breast a great deal against their shaving boards.

Three years ago a saddler and harness maker, steadily employed in cutting out work, applied to me under well defined symptoms of commencing organic derangement of the heart. I advised him to quit that part of his business immediately. He complied—and in due time the disease vanished.

There is a variety of occasional causes, which correct physiological views of the subject will at once suggest to the reflecting physician. Many indeed of these are beyond the reach of our control, yet not the less essential to be known, on that account, inasmuch as we are thereby enabled to detect the disease in its forming stage—to draw more correct prognosis—and prescribe such rules for the habit and conduct of the patient, as will greatly retard the progress of the disease, and alleviate the sufferings of humanity.

The moral causes are as numerous as the physical. They present an inexhaustible source of excitants, in one form or other, to deranged action of the heart—for, the heart being the seat of all our affections, every idea of a pleasurable or painful nature, induces a corresponding motion in this organ. The minute variety in the human constitution is endless—and the different excitabilities and sensibilities of individuals are equally multiform. Hence we cannot determine the exact amount of effect, by the application of a given quantity of any moral agent. In other words, similar incidents will affect individuals more or less forcibly, in proportion to the acuteness of their sensibilities—but the

exact amount of suffering or of organic affection it is impossible to estimate, except by the ultimate effects produced on the general system. The muscular energy of one heart will enable it to sustain, without sensible injury, a degree of influence which would, *cæteris paribus*, quite destroy another less firmly constituted—while the latter, possessing less sensibility, will escape the injury which inevitably awaits the more exquisite endowment of the former.

All sudden emotions of the mind, not so great as to prostrate the faculties, produce for a time increased action of the heart—as pleasure, anger, hope, fear, &c. Though the latter is said to be a debilitating agent, it certainly evinces in its first impressions, the marks of increased energy in the organic system. Hence the throbbing of the heart, quick, tense pulse, raising of the hair by the contraction of the fibres of the skin—and the performance of feats of activity and strength, far beyond our natural powers. Grief immoderately cherished, long established, or protracted into melancholy, robs the system of its energy, weakens the fibres of the heart, and predisposes it to the worst species of the disease.

General debility of the system, or natural laxity of fibre, also predisposes to this disease, and will hasten its formation, on the frequent repetition, or continued application, of any of the exciting causes. This fact would lead us to expect a more frequent occurrence of aneurism of the heart in women than in men—and I am not alone in believing, that many of their sufferings, passed off under the general and merciless name of hysterics, and the indefinable term *nervous affections*, might, on due examination, be traced directly to a lesion of this organ. It may be said, that appropriate doses of antispasmodic medicines instantly relieve these distressing symptoms—which could not be, if they arose from lesions of the heart. Conceding the premises, I cannot, however, acknowledge the conclusion of this proposition.

In fine, whatever may obstruct the free egress of the blood from the ventricles of the heart, or oppose undue

resistance to the contraction of its fibres—or whatever produces violent and frequent contractions of these fibres, without facilitating in a corresponding degree, the passage of the blood through the cavities of the organ, must induce disease and consequent lesion thereof.

On proceeding to the symptoms of aneurism of the heart, I must premise, that the anatomy of this organ clearly exhibits the different degrees of strength in its respective members, to perform the requisite actions of the whole—and on this difference of muscularity and energy depends the different species of the disease I am to notice. They have been classed, by a masterly pen, under two heads, namely, active and passive aneurism of the heart—and which are thus designated by the brilliant genius of Corvissart. “A sanguine temperament, robust constitution, vigour of age, violent character, are predisposing causes of aneurism of the heart, of the first or active species. A lymphatic temperament, feeble constitution, cacochymy, are predisposing causes of aneurism of the second or passive species.

“Active aneurism, is the effect of an acute lesion, or is derived insensibly from the central organ of the circulation by a violent effort—such as immoderate or long continued exercise, wrestling, riding, the bearing of burdens, the use of wind-instruments, singing, crying, external contusion, and very lively moral affections:—hence, in most cases, from the partial lesion of the organ, arises the disease of the whole.

“Passive aneurism, or with attenuation, occurs oftener, on the contrary, in consequence of chronic diseases, viz: engorgement, debility; in short, a preternatural state of the lungs, from any cause whatever, that is slowly formed in the course of the circulation. Let it be observed, however, that such obstacles sometimes generate active aneurism; but such cases are attended with the predisposition of sanguineous temperament, &c.

“In case of active aneurism, patients have a florid *vultuous* countenance.

“ In passive aneurism, the countenance is generally pale and languid; sometimes, however, injected and purple.

“ In the first case, the strokes of the heart are quick, dry, violent, and often to be seen. Then, whatever be the pressure of the hand, made over the region of the heart, it is always elevated by the motions of the organ, which, according to some authors, gives very often the sound of the rushing of waters heard at a surprising distance.

“ In the second, the palpitations are weak, more frequent, and softer. On applying the hand to the præcordia, we feel the impression of a soft body, elevating the ribs without striking against them, with a lively and distinct blow, as happens in the first species of these affections.

“ In every active aneurism, the pulse is frequent, strong, hard, vibrating; and whatever be the impression made on the artery by the fingers, they can neither destroy its calibre, nor suffocate its strokes. The pulsations of the carotids, and of the arteries of the extremities, are often distinctly visible.

“ In passive aneurism, or with attenuation of the parietes of the heart, the pulse is weak, more or less frequent, and soft; often scarcely perceptible, easily suffocated by the slightest pressure. On touching the artery, it may be said to be apparently hidden under the neighbouring parts.

“ In each species, the pulse presents great variety and irregularity, according to the complication of the construction, ossifications, &c. &c. and the degree of these complications.

“ In the first variety, the absence of sound on percussion is confined to a small point, the dilatation being usually much less.

“ In the second, the want of sound is more diffused, the dilatation being always greater. I ought, however, to premise, says our author, that one may be deceived, by concluding from the foregoing remarks, that passive dilatation always offers a greater enlargement than the active; sometimes the latter is vastly increased, and attains the size of the passive.

“Such are the principal signs which are capable of manifesting the active or passive state of the heart. If one of these signs be insufficient to enlighten the practitioner, a collection of several cannot fail to decide him on the nature of the affection.”

Notwithstanding this lucid exposition of the signs peculiar to each species of aneurism of the heart, experience teaches me, that there are cases in which some of these peculiarities will reciprocally exist in the opposite species, and the diagnostics will be more obscure at one period of the disease than at another—and, in proportion to the greater or less complication of the symptoms of each species, in the same case. One cavity of the heart may be affected with active, and another with passive aneurism at the same time : all its cavities are rarely, but may be, in a state of simultaneous dilatation. The ventricles, from their greater muscularity, become the most frequent seat of active aneurism of the heart. These, when unduly acted upon by the irritative property, and distensive power of the blood, increase in strength and crassitude, on the same principle, as the other muscles of the body become thicker and stronger by frequent exercise. Hence dilatation of the parietes of the ventricles, with apposition of new parts, and increase of strength and activity in the organ, constitutes simple active aneurism.

The auricles are by far the most frequent seat of passive aneurism of the heart—though a dilatation, with attenuation of the parietes, of *any of the cavities*, attended with a diminution of energy in the action of the organ, furnishes simple specimens of *this* variety of the disease.

From these remarks, I return to consider my second general specification—namely—the symptoms of aneurism of the heart.

Wishing to avoid elaborate arrangement of all kind in a loose essay, I shall divide the disease into two stages only—the curable, and palliative. In the first or curable stage, palpitations, more or less frequent, may be noted among the leading symptoms. The pulse, usually distinct,

is strong or weak, hard or soft, according to the species of the disease. The patient is said to experience frequent dizziness, and obscurity of vision, with a sense of warm vapours ascending from the thorax to the head. A late patient of mine described it as hot steam, ascending from the breast to the eyes—and by the frequent occurrence of this distressing symptom, his eyes were suffused with blood for several weeks. Respiration is short, and high, and the individual is soon out of breath on the least exercise. These are followed by panting, or laborious breathing, in which he cannot be satisfied with the air inhaled—a sense of weakness about the præcordia, with choaking. The person is often forced to stop in ascending a flight of stairs, to get breath, or hang over a door or fence, to relieve exhaustion of strength—and is very liable to catarrhal affections, from slight causes, which remain long. The cough on these occasions is dry, sharp, and sometimes spasmodic. The expectoration is often difficult and sparing. The lungs seem stopped with mucus or phlegm, as in a common cold. A pain is often felt about the region of the heart, darting through to the back, between the shoulders and into the cartilago ensiformis—with also a piercing pain in one arm, which I have always found in the left, about the insertion of the deltoid, or pectoralis major muscle. In the course of this stage of the disease, lowness of spirits, or a dull desponding state of the mind, is frequently observed, and perhaps exists in most cases in a greater or less degree. To this cause suicide has sometimes been traced. At this period of the disease digestion is generally good, and the appetite craving—but a sense of fulness and distress follows the taking of a hearty meal. Constipation is very common. The urinary secretions are at first natural—but become irregular in the progress of the disease. The urine sometimes stops, and then returns copiously. I have known it cease to flow for forty-eight hours together. As the disease advances, starting from sleep with fright, and a sense of suffocation, terrible dreams and images, on falling to sleep, with an increased susceptibility of agitation or alarm,

from slight causes, are all to be found among its symptoms. The stricture of the throat becomes more insupportable, greatly resembling the globus hystericus, described by authors, and regarded as an infallible sign of the presence of hysteria, by most physicians of the present day. Sooner or later, under these symptoms, the feet begin to swell, and the face to bloat: the cheeks and lips are florid, or inclining to purple, according to the prevalent species of the disease. The patient cannot use the slightest exercise, without exciting palpitations and fainting, with a sense of suffocation, and sometimes indescribable sensations of the whole body.

As the symptoms advance, the face becomes more bloated and distended, something like what takes place in great efforts of strength, or straining of the whole body. It is in fact an enlarged copy of the natural features, and may be easily mistaken for the effects of immoderate drinking. The lips, cheeks, and nose are livid—a general infiltration of the integuments commonly follows, with sometimes effusions of water in the thorax or abdomen, which occasions the disease to be mistaken for dropsy. A delirium supervenes, particularly at night: there is a total inability to lie down—great languor—a constant sense of suffocation—respiration is performed with great labour, and no apparent benefit to the patient, who is now unable to enjoy a moment's repose. A dry convulsive cough, sometimes discharging black, coagulated blood, sometimes puriform matter, may lead us to mistake the lungs as the true seat of the disease. And indeed, I have sometimes seen the two organs so simultaneously disordered in the same patient, as to make it very difficult to say which was the primary affection.

In the continuance of these symptoms, the appetite is generally, or suddenly lost—digestion is gone—the pulse small, frequent, irregular, or indistinct, even a kind of fluttering only, is sometimes perceived. The strokes of the heart cannot now be felt—but a sort of disorderly motion, not easily described—and pressure with the hand on the abdomen, adds greatly to the disordered sensation about the

heart. The serous diathesis becoming excessive, symptoms of general dropsy, sometimes attended with rupture of the integuments of the lower extremities, are to be observed. A partial disappearance of the intumescence—a wild, or sometimes languid state of the eye—great irregularity, or indistinctness, of pulse—a worn out, haggard state of the countenance—with the most laboured respiration and universal exhaustion, mark the approach of death—which now intervenes to terminate this painful combination of affections.

Many cases will not, in the whole course of the disease, produce all the symptoms here enumerated—and, still fewer exhibit them in the exact series in which they are detailed. But enough, in every case, may be observed, to guide the judgment of the practitioner, after his attention has been duly directed to the subject. I have lately seen a case of active aneurism, which gave no decided warning of its approach, until about ten days before death, except an occasional difficulty of breathing, and a fulness of the face. The disease was seated in the right ventricle, and its gradual evolvment could be traced through a period of more than twelve years back, to repeated severe attacks of peripneumony. Another case terminated in death about one year ago, the commencement of the cause of which, could be pretty clearly traced back fifteen years. It excited no attention till within nine months before dissolution, when I was consulted—and without hesitation, predicted the result. This case, though it exhibited very few symptoms, they were so decisive, as to fully warrant the prediction, which was, in due time, as fatally verified.

A full history of these cases, with several others, which I deem of great interest, I shall at a future period, present to the public.

Notwithstanding our great liability to organic affections of the heart, and the frequency of their occurrence, we may err in hastily deciding on their presence, from slight or evanescent symptoms. Extensive adhesion of the pericardium or lungs—idiopathic dropsies, or other diseases of

these viscera—hypochondria—dyspepsia, or increased excitability of the general system, and sundry other forms of disease, will sometimes exhibit more or less of the symptoms above noted, when the heart is sound. Correct physiological knowledge, experience, and due attention to the symptoms and condition of the patient—an inquiry into the state of mind, habit of body, previous diseases and predispositions of the patient, must ripen our judgment, and prepare us for the faithful and able discharge of professional duty, in this delicate and very difficult department of practice.

I shall now dismiss this part of my subject, after briefly noticing percussion as a mode of discovering disorders of the chest. This, I believe, was first suggested by Dr. Avenbrugger, of Vienna, who published a work on the subject, lately translated into French.

Corvissart, in every case of fatal aneurism of the heart, which he has thought proper to lay before the public, notices the effects of percussion on the thorax, and deems it a valuable mode of determining the presence of the disease. Some of our own countrymen, however, think less highly of it, perhaps from not having fairly practised, or fully experienced its effects. I perform it thus: first lay the patient nearly horizontal, on his back, make bare the anterior part of the thorax, exclude all noise, incline my ear to the part, and then tap gently, with the ends of my fingers, along the joinings of the ribs with the sternum, from below upwards, or throughout the whole junction on both sides, extending the tapping laterally on the ribs, to the distance of four, five, or six inches from the sternum. Where the viscera are healthy, the sound thus produced is clear, open, elastic—but when the heart is dilated so as to press its parietes against the walls of the thorax, the sound is dull, and dead—resembling that which would proceed from an inelastic body, as a ball of yarn, or bag of cotton. Much water in the pericardium, or thorax, will deaden the sound, and so, I believe, will extensive adhesions, and solidity of structure in the substance of the lungs:—also infiltration of

the integuments of the thorax, and the adipose substance in the mammæ of females: yet, notwithstanding these casualties, I consider percussion a valuable auxiliary in deciding on the presence of organic affections of the heart. In the early stages of the disease, this sign is not to be found, for it cannot exist in simple cases, until dilatation takes place—and the premonitory symptoms may long exist without producing sensible dilatation.

Mr. Leannec has lately presented to the French Academy, a memoir, detailing the various modes of applying this discovery. Among others, he recommends the use of a tube, with thick sides—or a cylinder, pierced along its axis with a narrow aperture. This, on being applied to the chest of a person in good health, who is speaking or singing, produces a sort of trembling noise, more or less distinct. But if there be an ulcer in the lungs, the voice of the person can no longer be heard by the ear at liberty—the whole of the sound passing along the aperture of the cylinder, to the observer. Commissioners appointed by the Academy, have verified the experiment in various cases.

In passing to the third head of my division of the subject, namely, the cure of aneurism of the heart, it will be proper to state, that it is sometimes a point of the greatest difficulty to determine in the commencement, which species of the disease prevails, yet the determination is essential to the successful application of the remedies, and will greatly depend upon the *tact* of the practitioner.

The treatment will in every case be influenced, as well by the period or stage at which it has arrived, as by the species of the disease. I know of no fixed point at which to draw the line of discrimination between the curable and palliative stages—but it will generally be found to exist somewhere previous to, or at the commencement of infiltration, and before a vitiated circulation is visible in the general habit. I have, however, seen the symptoms retrograde, and the disease abate greatly, under the treatment now about to be named, after a very livid countenance, and injected face had made their appearance—and I have no doubt that a

complete cure would have followed a timely perseverance in the means.*

In active aneurism of the heart, and within the limits of the curable stage, the indications are:

1st. To remove the causes, or lessen, as far as practicable, their influence on the system.

2d. To abate the distending force, and chemical stimulus of the blood, and the energy of the heart.

3d. To restore a due balance of power, or equable action and strength, to the general system.

In proceeding to the first indication, all suppressed evacuations should be as far, and as soon, as possible removed: all metastasis of habitual cutaneous eruptions, or hereditary diseases, should be restored as soon as possible to their original seat, by the most appropriate means. Asthmatic affections must act directly, and powerfully on the right cavities of the heart, by the obstruction they oppose to the free passage of the blood through the lungs—hence, their removal is to be attempted by every rational and approved mode. In short, whatsoever has been enumerated under the head of causes, or in the estimation of the intelligent physician, may act as such, must be immediately attacked. But here, however humiliating to the pride of science may be the confession, truth compels us to acknowledge that the influence of moral agents is beyond our utmost efforts to control. Where these are intense, or frequent in their operation—where deep seated, or of long duration, they are as much beyond our power to command, as the swelling of the ocean or raging of the tempest, to the storm beaten mariner—and, like him, the unhappy victim of too lively moral affections, will sink under their influence, to rise no more. In cases where the patient suffers from the undue influence of moral agents, all the physician can

* 1822, July 31.—Eighteen months have now elapsed since the above remark, and the subject of it is so far recovered as to do light farmer's work, and enjoy comfortable health, but cannot bear great exertion or fatigue. General intumescence had commenced when he placed himself under my care.

do, is, to clearly expose the danger—to inculcate lessons of stoicism—advise new sources of amusement for the mind; call in the salutary aid of rational religion, and adapt his physical treatment to the prevailing symptoms and condition of the patient.

The second indication—namely, to abate the distending force, and chemical stimulus of the blood, and the energy of the heart, will be best answered by bleeding, abstinence, demulcents, and a horizontal posture.

By lessening the volume of blood in the system, we remove the principal obstacle to the due contraction of the heart, and the cause of excessive stimulation of its fibres. For, as before stated, in the species of the disease now under consideration, an increase of energy in the muscular tissue of the heart obtains, with an acquisition of new parts or preternatural growth—so, the abstraction of a portion of blood, removes, in a due ratio to the quantity drawn, both the chemical and mechanical stimulus of this fluid. Thus less stimulated and distended, the fibres of the heart possessing all their contractile property, will close over the lessened volume of the blood, and act for a time with less energy, and less tendency to extend their dimensions.

As a debilitating agent, abstinence will next claim our attention. Nothing indeed tends more to check the derangement of parts, and waste the energy of the whole system—and consequently of the heart.

Demulcent drinks are supposed useful. I think I have found them very much so, in regulating the state of urinary secretions particularly. Of this class of articles, I would advise, as most cheap and convenient, pumpkin and watermelon seed teas, solutions of gum Arabic, barley water, or a decoction of the twigs of sassafras, bruised, and boiled until all the mucilage is extracted. Any of these may be freely used, without injury in any respect to the patient.

A horizontal posture of the body is more effectual than any other means under equal circumstances, in preserving an equable action in the circulating system, on account of the general relaxation, and the diminution of the gravitat-

ing force of the blood, and hence is indispensable in the curative process. We have the authority of Albertini, a respectable Italian physician, in favour of the efficacy of a treatment similar to the above.* He says, in a memoir of the transactions of the Academy of Bologna, that his friend Valsalvo was the first who put it in practice. His success justified the expectation, and the practice was successfully adopted by other physicians of Bologna. He tells us that young people thus treated, where the disease had not reached its advanced stage, were either cured or evidently relieved—and the aged, and those in whom the disease had become inveterate, had found in this method a more or less powerful obstacle to the progress of the complaint, and a prolongation of life—provided the organic lesion had not extended so far that the secondary disease had already made considerable progress. But whatever success may have attended the practice of these gentlemen, it is plain, that their want of discrimination between the two species of the disease, exposed them to a frequent misapplication of it. Corvissart has made a similar remark in commenting on the method of Albertini. To assuage a paroxysm of the disease, Morgagni, among other things, advises the immersion of the extremities in warm water, thereby inviting into these parts a large portion of blood. This, however, is at best but a very temporary palliative—and though it may seem paradoxical, I can assert, that I have found more visible benefit, at these distressing moments, in the use of large doses of tincture of opium and camphorated spirits, conjointly given—and where there was much palpitation, in the exhibition of forty, sixty, or eighty drops of tincture of digitalis, sometimes alone, and at other times combined with an equal quantity of laudanum.

The third indication—namely—a restoration of due action, and re-action, to the different parts of the general system, will call for the remedies required in debility in general. With this view, gentle stimulants, cordials, a mode-

* Viz : bleeding, and abstinence, even to exhaustion.

rately nutritive diet, and a bath, the temperature of which is suited to the state of the system, may be employed. These must at first be cautiously applied, so as to avoid recalling the vibratility, or disordered action of the organs: to which may be gradually added, gentle exercise, change of air, recreation, and business.

These are the leading remedies I have used in the cure of active aneurism of the heart, and I have no hesitation to say, that in several cases they have been attended with the desired success. The better to insure the advantage expected from them, we must closely attend to the sensations, occasional symptoms, and varying condition of the unhappy sufferer. All the functions must be brought as nearly as possible to what nature requires—and anomalous or irregular symptoms explained to the satisfaction of the patient, to inspire hope, and allay the anxiety of his mind—and which must be relieved as promptly as possible, by the best means within our power and judgment.

It must be observed, that by a *cure* of this disease, I do not imply a perfect restoration of the organ to that state of health we might suppose it to possess originally. Corvissart doubts whether ever such restoration takes place, after an organic lesion is formed. By the term *cure*, I mean a complete dispersion of the symptoms, in the incipient stages, antecedent to organic derangement—or, such permanent suspension of the symptoms in the forming state of a lesion, as will stop all further disorganization—and enable the subject, under favourable circumstances, to remain free from suffering, as long as he avoids the exciting causes.

The period required to effect a cure will be very different in different cases, and much influenced by circumstances. Two or three weeks' judicious management, may in some cases, if properly timed, be sufficient to remove the danger—while in others, five or six months of the most assiduous attention will be exacted.

From what has been said of the opposite conditions of the diseased organ, in active and passive aneurism of the heart, it follows, that the treatment from which we may

expect success in the former, will be altogether inapplicable in the latter species of this disease. For, though the preternatural size and distention of the heart in this case, seem to call for the abstraction of a part of its contained fluid, yet the almost total loss of contractility in the muscular fibres of the parietes of the enlarged cavity, would not admit of their retraction, over the diminished volume of blood, on the stimulus of distention being withdrawn. These parietes, weakened and thinned by overstretching, and nearly membranous, would remain loose and flabby, and might cease altogether to act, on withdrawing the distending power.

Hence it appears that in the passive species of this disease, it is from the palliative treatment *alone* that we are to hope for even a temporary alleviation of suffering—though complete cures may be effected by an early and continued application of the proper remedies. When the premonitory symptoms of stricture about the throat, palpitations, distressing dreams, starting from sleep, &c. mark the approach of this affection, we may in most cases employ one, two, or more bleedings, so light as not to debilitate sensibly, and yet sufficient to lessen the volume of blood in the heart, allowing sufficient time between each bleeding, for the weak, distended fibres to contract over the diminished fluid. With these we must lessen the force of the blood on the heart, and obviate the useless exhaustion of strength, by enjoining a horizontal posture of the body. We must prevent or remove, as far as possible, all causes of irritation of the mind, through the medium of the passions, or the bodily sensations—seclude the patient from all intercourse, except that of nurses, and a few agreeable friends—exclude noise and unpleasant intelligence of every kind—preserve a natural state of the bodily functions—meet the paroxysms by palliatives, hereafter to be named—apply issues to the hollow of the thighs—persevere in a steady use of well selected tonic medicines—inspire the cheering hope of recovery—and as the health improves, avoid former established habits or employments—indulge in the society of friends, and gentle

exercise, in proportion to the improving strength of the body and mind, carefully avoiding even a momentary excess in either, and a success will often crown our labours.

Where nature lays the foundation of this malady, by a want of stamina, connected with too lively a state of the sensations—and this predisposition is encouraged by established habits, or the frequent repetition of exciting causes, the disease insidiously steals on to its incurable state—exciting oftentimes very little alarm in its progress, until it is beyond the reach of human skill to remove. The passive will then, in common with the inveterate species of active aneurism, become the subject of palliative treatment, which now remains briefly to be considered.

The objects of the palliative treatment, are to procure comfort to the patient, and retard the rapid progress of his symptoms. Every essential pre-requisite in other inveterate diseases, are equally required in this—as fresh air, clean, comfortable apartments, bedding, diet, nursing, &c. Every distressing symptom is to be promptly met, by the administration of such medicines as will most effectually relieve it, without any regard to a general restoration of health. For instance, irregularities in the urinary secretions, are to be treated with mild diuretic and demulcent drinks, solutions of carbonate of soda, &c.—pains, by anodynes, as poppy tea, opium, henbane, &c.—coughs, by opiates and expectorants—spasmodic affections, by diffusible stimulants, and antispasmodics, as the antispasmodic gums, opium, ether, camphor, &c. In several cases, I think I have found *issues in the thighs* assist much in staying the progress of this disease. Their *modus operandi* will furnish matter of inquiry for another communication. I was first led to employ them on the testimony of M'Bride and Darwin, as to their utility in angina pectoris.

In short, the choice of this class of remedies, and the extent to which they are carried, must depend upon the judgment of the practitioner, and the constitution of the patient. In their use we must be cautious to avoid the abuse of them. I have stated the objects of palliatives to

be twofold—the abatement of sufferings, and the protraction of life: where the latter only can be attained, and but for a short time, I have doubted the propriety of a strenuous perseverance in the use of them.

When infiltration of the integuments appears, the disease is in most cases taken for a hydropic affection—so, the dry cough, especially on lying down, breathing, &c. always excites the suspicion of hydrothorax. And though remedies for the radical cure of simple or idiopathic dropsy would be inexpedient, under these deceptive symptoms, yet are they generally employed, and their uniform failure has established the prevalent idea of the great obstinacy, or even incurability of this disease.

In the evolution of symptoms of aneurism of the heart, we descry the peculiarities said by authors to designate the disease called angina pectoris—a kind of disease, *sui generis*, the causes of which have not been well understood. I am not yet prepared to assert, unqualifiedly, the entire homogeneity of cause, in angina pectoris, and aneurism of the heart, though it is clear to my own mind, that the above view of the latter, more fully develops the mysterious character of the former, than any thing I have collected from books on the subject. By Dr. Parry, of Bath, the cause of angina is referred to a diseased or ossified state of the coronary arteries, and he says the symptoms are the effect of blood accumulated in the cavities of the heart. While Thomas, in his excellent practical work, asserts that numerous dissections of bodies that have died of this disease, have not discovered any morbid appearances in the heart or its appendages; without, however, naming the particular cases, nor the persons on whose authority they are predicated. I cannot, therefore, to such loose authority, yield an opinion which I humbly conceive to rest on more solid data, viz. the constant and close similarity of phenomena exhibited in the two cases.

I have now passed through the subject proposed, very summarily, and very imperfectly indeed—though I trust sufficiently intelligibly to convey some idea of its im-

portance to such members of the profession as have not made it a particular part of their study. In this hope I rest satisfied for the trouble which I have had in preparing for the press this essay.

THE doctrines of Broussais have, of late years, excited great attention as well in Europe as this country, and particularly his theory of fever. As was to be expected, he has encountered considerable opposition, and in some instances, marked as we think by illiberality and injustice. Having in vain attacked the general principle of fever originating in a point of irritation or inflammation, and subsequently becoming diffused through the medium of sympathy, so as ultimately to involve in a greater or less degree, every part of the system—some of his adversaries, changing their ground, now attempt to detract from his merits, by the denial of the originality of his views. Of the latter description, is the erudite writer of the ensuing paper—which, as exceedingly interesting, one of our friends has translated from the French for this Journal. That in the older writers, similar hints to the same purport may be met with, and that similar doctrines of fever, pretty fully evolved, have been long maintained in this country, by professor Caldwell, and others—of a knowledge of whose labours, however, we entirely acquit the French pathologist, are facts susceptible of irrefragable proof. Yet the title of Broussais, to having embodied a vast mass of detached materials, into a more distinct and luminous system, than had hitherto been presented, seems to us to be so clearly made out, that in a spirit of candour it must be conceded.

EDITOR.

ART. III. *An Examination of some Medical Doctrines, compared with those of Dr. Broussais.* By M. A. FODERA, M. D. Paris, 1821. Translated from the French, by ROBERT E. GRIFFITH, M. D.

Opinions of writers before the time of Baglivi.

AMONG ancient authors, the opinion of Cælius Aurelianus, as also that of the methodists, in considering fevers as

diseases produced by an obstruction of fibre, of which the cause, as well as that of inflammation, depends on engorgement, and in treating them by diet, and relaxing remedies, have most coincidence with the new doctrines. Diet in the cure of fevers was also prescribed by Hippocrates, Erasistratus, Asclepiadas, and Celsus.

At a subsequent period, Fernelius considered the seat of continued fevers to be the heart, and that of intermittents, the stomach, duodenum and pancreas: in the treatment however, he dared not depart from that of the Galenists.

In imagining the *Archæus* to be situated in the superior orifice of the stomach, Van Helmont gave to this organ an important influence in the production of diseases, and on the action of remedies. He also considered it as the seat of fevers. These, he says, are the effect of a struggle that the *Archæus* undergoes with the morbid cause, in expelling it from the body, and hence he recommends the administration of sudorifics. “*Remedium febrium est sudoriferum, quod incitat, extenuat, resolvit, liquat, abradit et simul abstergit causam occasionalem.*”*

In asserting that fevers are the effect of some inflamed viscus, and particularly the stomach, Scretta also considered that the circulation of the blood is embarrassed by an obstruction of the capillaries. This opinion caused him to reject the antiphlogistic theory, and on the contrary he prescribed alkaline, spirituous, and volatile remedies, which according to him are capable of overcoming the obstruction and of curing the inflammation.†

Fernelius, in determining the seat of fevers—Van Helmont in locating them in the stomach, and Scretta in considering them as depending on inflammation, have approached the doctrines of our own times,—though all three had strange notions of their nature, and erred widely, in prescribing mischievous and improper remedies.

A great observer seems to have added much to our

* *Febrium doctrina inaudita*—auctore, J. Van Helmont, cap. xiv. 87

† Scretta, de *Febri castrense maligna*, &c. 1716.

knowledge of the gastric affections—in maintaining that most fevers are inflammations of the stomach or other viscera, and that their treatment should be antiphlogistic. This observer was Baglivi, and the ideas of this illustrious practitioner merit a particular analysis. We consider him as the true precursor of the labours of the nineteenth century, and to have thrown the most brilliant light on the subject which engages us.

Of the opinion of Baglivi on the seat and treatment of fevers and other gastric affections.

In many parts of his works, Baglivi speaks of the great sensibility of the stomach, and of the influence it exercises over the animal economy, as well as of the sympathetic relation it possesses with other parts. He also states that the irritation of the stomach is the cause of the ataxic symptoms in fevers. This organ, endowed with great sensibility and powerful sympathies, according to our author is the seat of almost all fevers. In effect he considers acute fevers to depend on inflammation of the stomach, and the description he gives, is of a gastric complicated, and combined with an ataxic fever. He also supposes lypyric fever, in which the patients complain of violent heat internally, and cold externally, to depend on erysipelas of this organ.

Before the time of Baglivi, all violent fevers were considered as malignant, that is as fevers produced by a deleterious or poisonous agent, but he observes that although this is sometimes the case, yet that for the most part they depend on erysipelatous or phlegmonous inflammation of the viscera, or rather of the stomach and intestines. He also often saw an engorgement of the lymphatic ganglions of the mesentery—a complication frequent in a country as marshy as that of Rome, where this great man practised medicine. He states that two thirds of the fevers of that city, depend on an engorgement of the mesentery, and calls them mesenteric or lymphatic fevers.

The fevers that ancient authors termed assodes, elodes, epiales, hemitribes, triteophies and thyphodes, and which

were classed with the malignant fevers, Baglivi thinks as often to arise from inflammation of the stomach and intestines, or from irritation of the *primæ viæ*.

Epidemic and contagious fevers are supposed by him, to proceed from an inflamed stomach. This great practitioner established as a certain sign by which to ascertain if inflammation of the viscera exists, the dryness of the tongue, and he adds, that when there is the slightest degree of inflammation, the tongue begins to dry, and this disposition augments in proportion to the intensity of the inflammation.

It is scarcely necessary to remark that Baglivi knew of the complication of gastritis, and entero-gastritis, with affections of other organs—for since the time of Hippocrates, practitioners have always been aware that fevers are generally complicated with other diseases—as the following axiom proves, “*cum nullus deter morbus fere, qui non sit conjunctus cum febre.*”

As Baglivi recognised the generality of fevers as depending on inflammation of the stomach or intestines, he must necessarily have observed that gastritis and entero-gastritis are also connected with diseases of other organs. He further observed the reciprocity of action between the skin and mucous membrane of the stomach in their several diseases, as in small-pox, scarlatina, &c. Thus, he says, the symptoms arising from the internal affection, are mitigated by the appearance of the eruption on the skin, and on the contrary this eruption does not take place during the exacerbation whilst the affection of the stomach and intestines is violent.

Baglivi considers the various and strange symptoms of hypochondriasis, many of the diseases of the head, nervous phthisis, the convulsions of infants, as well as the cough that torments them, as arising from the stomach—and he also observes that attention to the state of the appetite, is of the greatest importance. “*Inappetentia semper mala, semper suspecta, semper timenda: dum viget stomachus vigent omnia.*”

This celebrated physician, having considered that the generality of fevers have their origin in the stomach, necessarily concludes that the causes which produce these

fevers act on this regulating organ of the nutritive functions. When speaking of epidemic and contagious fevers, we stated that he fixed their seat in the stomach—and he remarks in the same passage, that they take place by means of the saliva, which having imbibed deleterious and contagious particles occasions a prejudicial impression on this organ and becomes the cause of the future fatal consequences—In other parts of his work he observes that luxurious repasts are causes of fevers, and other internal affections, by their action on the stomach.

The mental affections, and principally grief and terror, are causes of fevers, sometimes of severe ones. They are particularly indicated by our author as having a special action on the stomach, and as being the cause of a great number of acute and chronic diseases—hence he recommends sedulous attention to this organ, in diseases derived from affections of the mind.

What we have hitherto spoken of relates to his pathology: we will now proceed to examine his therapeutics.

The treatment that Baglivi prescribed to overcome acute fever is antiphlogistic, consisting in general bleedings, nitrated drinks, and emulsions, and he recommends that purgatives should not be given. “*Fuge purgantia tanquam pestem.*”

In fevers which commence by syncope, hiccough, vertigo, and anxiety, he orders an emetic, and has observed a calming of the symptoms immediately to take place, especially if there be cardialgia. He recommends that emollients and demulcents should be given afterwards.

In the treatment of mesenteric fevers, if there be symptoms which indicate inflammation, our author prescribes bleeding during the exacerbation: when this has passed, the administration of laxatives, light purges, fomentations to the abdomen, and the use of those stomachic plants which are slightly bitter and opening. He particularly proscribes the use of bark before the engorgement of the mesentery has disappeared. He observes that in this latter stage emulsions and watery drinks are hurtful—and that

in these fevers, patience and time are necessary for their perfect cure.

With regard to the treatment of intermittents, he considers the cinchona as an excellent remedy when there is no suspicion of an inflammation in any of the viscera, or of an internal abscess, or morbid disposition of any part—and when the urine is not red coloured. But whilst these exist he excludes it as hurtful, as, instead of curing, it only increases the disease, and causes violent inflammation and even gangrene. He also recommends that it should not be administered in the commencement of the disease, as it often does not relieve the fever—or if it does, a relapse takes place in a few days, and becomes the source of fatal consequences. He has found that cinchona united with the muriate of ammonia acquires a greater power in arresting the fever, and he adds, if it should not check it, we possess a certain remedy in chamomile flowers.

He designates the signs and circumstances which indicate the employment of stimulants in these fevers: he greatly condemns the use of purgatives, as irritating in such a degree as to convert a simple intermittent into a double or even a continued fever, and, if they are persisted in, as causing it to become chronic and sometimes even to terminate in death.

This knowledge of the inflammations of the viscera regulates our author in the administration of remedies in other diseases. In small pox, for example, or any other analogous affection, if he perceived that before the eruption appeared, there was great excitement or inflammation of the viscera, he bled, and administered antiphlogistics—and if under this treatment the eruption appeared, he continued the antiphlogistics and added light sudorifics given with great caution. Even at the time of the eruption, if there existed great heat, anxiety or subsultus tendinum, &c., he ordered cupping to the shoulders:—He advises not to give purgatives or violent diaphoretics in the commencement of this disease, as they often excite inflammation and fever.

He generally treated the other acute affections of the di-

gestive canal on the same principles. Thus, in colic, and pains of the abdomen, particularly if there be thirst, universal heat of the body, and dryness of the tongue, he prescribed an infusion of chamomile, and rejected the use of purgatives. He says, nevertheless, that sometimes they may cure the colic, when there is neither fever nor vomiting.

In the treatment of the iliac passion or ileus, he orders emollients and anodynes, and remarks that powerful remedies, such as purgatives and irritating injections, obstruct the bowels still more, by augmenting the contraction and retraction of the intestinal fibres.

In diarrhœa, Baglivi recommends that the treatment should not be commenced by astringents, as they may produce a chronic affection of the intestines, which often ends in ascites, and he also suggests that no meat should be eaten.

With regard to the affections of the stomach, he says there are many persons who suffer pain "three hours after eating." In such cases if they experience pain, flatulency, &c. he observes that the tinctures of the ground ivy (*glechoma hederacea*) and of sassafras, produce an admirable effect: the oil of mint is also useful in all affections of this organ. Those who experience acidity during digestion, should abstain from wine, and make use of water qualified with aniseed or canella. The pains of the head depending on the stomach he treats by diet, stomachics and injections.

We will next examine the rules which he has laid down respecting bleeding, the administration of stimulants, antiphlogistics, vesicatories and purgatives. Bleeding, according to him, should be prescribed in acute and inflammatory fevers—and whenever they are attended with plethora, inflammation, &c. he orders it in the commencement of the disease, and avers that it is followed by a beneficial and salutary perspiration. He also remarks that, if in a bleeding from the arm the patient became worse and that delirium or sleeping supervenes, a bleeding from the foot is useful.

He rejects the use of purgatives as prejudicial in malignant fevers, and moreover remarks, that many pretended malignant fevers are the effect of stimulating treatment, prescribed without a knowledge of the cause, and which, instead of appeasing the disease, aggravates the symptoms and the danger.—He adds, that he has rarely observed such fevers when they were treated from the commencement according to his method, that is, the antiphlogistic. He indicates the symptoms for which antiphlogistics should be given—and we have already seen, that when in intermittents there existed signs of continued excitation, he condemned the use of the cinchona as hurtful.

By our author, sudorifics are also proscribed in those pretended malignant fevers, as being stimulants—exciting the latent inflammation of the bowels, which is the real cause of the fever, and from their placing the patient in a more painful and perilous situation.

As regards blisters, our illustrious practitioner observes, that their great utility is manifest in those cases of fever where the extremities are cold, and the pulse small, and where there exists a propensity to stupor or anxiety. Their utility is greater in such cases in winter, in lymphatic temperaments. On the contrary, if there is delirium with acute fever, dry tongue, and the signs of great inflammation of the viscera, blisters are prejudicial.

In the administration of purgatives, he establishes as a precept, that in the commencement of acute fevers, as also in other acute and inflammatory diseases, we should avoid them as too stimulating, as their effects are often fatal by augmenting the evil, and placing the life of the patient in danger. We have already remarked, that the action of purgatives changes intermittents into continued fevers, and that their repetition may be fatal. Our author also indicates in what cases they may be employed safely and advantageously. They are useful, he observes, in chronic affections of the alimentary canal, particularly if there be an engorgement of the mesentery ; and hurtful when there is great excitement, as tending to increase the irritation. This is a ge-

neral rule, according to our author, in all diseases complicated with fever. The treatment that Baglivi generally adopted in acute and febrile diseases, was simple, and strictly according to the precepts of Hippocrates. He complains that his cotemporaries had either forgotten or despised these precepts in prescribing remedies dangerous and even fatal to the patient.

The theory of Baglivi is founded on solidism, of which he was one of the founders and most zealous propagators. The humors are considered by him as depending on the solids: nevertheless, to speak truly, the theories of his time still had considerable influence on his language and ideas—but we doubt not that he would have relinquished them, if a premature death had not snatched him too soon from science and humanity.

Baglivi designates two classes of diseases—the one depending on an irritation of the solids, the other on their relaxation—the first corresponds with diseases of action, the second with those of depression. He explains the sympathies which are developed in diseases by an oscillatory irritation, for he thought that the sympathies were communicated by oscillations of fibre, or rather, he made use of this mode of expressing what we can neither see nor understand. Thus, he says, in infants, dentition irritates the gums, and that the irritation is communicated to more distant parts, and produces diarrhœa and convulsions. In another place he observes, “*dolores ischii, dolores lumborum ex infarctu congestioneq̃ue pravorum, crudorumq̃ue humorum in mesenterio orti, ad genu, et ultimos digitos protenduntur. In his, aliisque id genus casibus hebentur communicationes, seu conversiones malorum e partibus in partes ob irritationem solidi magis quam ob fluidi metastasim ac transmissionem. Quæ si exterius fieri videmus cur negabimus eadem mechanice, et interius posse quoque contingere in productione successioneq̃ue morborum.*”

The diseases that Baglivi considered as depending on irritation of the solids, are those which in the new doctrine are placed among the diseases of irritation: but the most part

of those which he viewed as depending on relaxation of fibre are also now classed among those of irritation.

He classed purgatives, diuretics, diaphoretics as irritants, and baths, emollients, and anodynes as relaxants.

It is scarcely necessary to state that Baglivi does not present his ideas in the same order in which we have given them. We have simplified them in selecting what appeared to approach the new doctrine: Yet the knowledge of the inflammation of the gastric viscera as a natural or genuine cause of fevers, is a truth strongly marked in his works, and was his guide in the treatment of diseases.

We may then conclude that this great practitioner, had begun to trace the true road in his study of the diseases of the alimentary canal, which are the real foundation of pathology and therapeutics—and to indicate their proper treatment.

We will now examine the labours of Rega, who in embracing solidism, and the principles of Baglivi, may be considered as his disciple.

Opinions of Rega, on the importance of the stomach, and on the seat, nature and treatment of fevers.

Rega wrote his work to spread the Hippocratic doctrines, and united his efforts to those of Baglivi, Stahl and Hoffman, who all complained, and with justice, that these doctrines were much neglected—on this account he studied the sympathies of the human body in a state of disease, and drew his deductions principally from practical experience.

The study of the sympathetic relations, and the influence which each organ exercises on the whole of the living economy, proved to him, that the stomach is an organ the most important to be attended to by the pathologist and practitioner—that it is the centre of the sympathies, and the part where the *consensus* of the others terminate—and finally, that it is the seat of most fevers.

He thinks with Hippocrates, that the physician should sedulously endeavour to ascertain the seat of diseases—

“Unum quoddam est scire necessarium,” says Hippocrates, “qualis causa et qualis origo et fons sit malorum quæ sunt in corpore:” for the physician who knows not the source of a disease, cannot apply to it a proper remedy, and instead of combating it he may augment it, or even be the cause of a new disease.

In chapters v. and vi. Rega establishes by reasoning, by facts and the authority of celebrated physicians, that the stomach is the most important organ in the human economy, by the influence of its sympathies:—he elucidates the *consensus* of this organ by an account of the effects of the poisonous action of *cicuta*, taken from the works of Wepfer.

It is from its irritating powers, that he considers all the pernicious effects of this plant to arise. He reports a case from Hildanus, in which the irritation of the alimentary canal produced by a pin, which a woman had accidentally swallowed, was the cause of a series of symptoms, resembling those of ataxic fever.

The remarks and practice of Harris, and of Baglivi, prove that a great number of the diseases of children have their origin in the stomach, and the observations made by Galen, Forestus, Lomnius, Brunner, &c. prove that the same is the case in other periods of life—consequently he recommends to physicians to consider this organ attentively, both in their theory of diseases, and in their treatment. He explains the great influence of the stomach, by its great sensibility, and by the relations it has with other organs, by means of the great sympathetic nerve, and *par vagum*: whence it arises, that the stomach may be affected either primarily or sympathetically—“*Quemadmodum enim ventriculus mala sua cum aliis quibusvis partibus communicare ita et ipse aliarum partium incommoda sentire consuevit.*”

In the five succeeding chapters, are detailed observations, made by the most celebrated physicians, proving that pains in the head, delirium, vertigo and comatose affections, as well as certain diseases of the eyes, may depend on the stomach, as also coughs, difficulty of respiration, palpitation,

syncope, hiccough and nightmare. Finally, its sympathies with the tongue, throat, intestines, liver, kidneys, uterus, articulations and skin, have been remarked by all practitioners.

We now arrive at chap. xii. in which he treats of fevers. “*Præmissa generali febrium idea ostenditur eorum fomitem in ventriculo sæpius hære.*”

He gives an historic account of fevers, in which are traced in an admirable yet laconic manner, the inherent characters of gastric irritations: but he adds, relying on the authority of Boerhaave and Silvius, that the essential character of fever is frequency of the pulse. Facts, however, prove, that frequency of the pulse may sometimes take place from the affection of any organ, especially those of the breast, although the stomach be perfectly free from disease, and this explains to us why Rega has observed, that the stomach is very often, though not always, the seat of fevers.

According to our author, stimuli act in two modes. They either contract and deaden the fibre, or they irritate and augment the motion of it, and to this double action of stimuli, correspond two species of fevers—one when the heart, great vessels and capillaries have redoubled their action—the other when the heart and arteries beat quickly, but the capillaries are spasmodically affected, and intercept the course of the blood, so that this fluid accumulates in the great vessels, and thus causes the frequency of the pulse, and throbbing of the heart.

The seat of fever, according to our author, is in the membranous and nervous parts, which are sensible to the action of stimuli: therefore, as he considers the stomach as the most nervous and sensible of the viscera, it results that this organ is the most frequently affected by fever. In effect, he says, all malignant fevers have their origin in the stomach. He cites a passage of Baglivi, where he treats of fevers which commence by syncope, vertigo and hiccough, and which he locates in this organ. He also cites Etmuller, Lindamus, and Van Helmont, who recognize by the nature

of the symptoms, the seat of epidemic and contagious fevers to be the stomach.

Bartholinus affirms, that the stomach was found inflamed, sphacelated and sometimes with eschars on opening persons dead of malignant fevers. Etmuller, Epiphanius, Borelli, and Simon Pauli, have observed similar appearances produced by eating of indigestible food—consequently, our author concludes, that the ordinary malignant fevers are the effect of a gastritis or of the action of crudities, which surcharge and irritate the stomach.

He thinks with Van Helmont, that the plague has often its seat in the stomach, and cites Lindamus, Bartholinus, Diemerbroëk, Hoffman, Forestus, &c. as stating that, both from the symptoms and dissections, the stomach is diseased from the effects of its deleterious miasma.

In his description of acute fever, Rega makes use of the expressions of Baglivi, who supposes it to depend on an inflammation of the stomach; and adds, that the causes which ordinarily produce it, are those improperly called non-naturals, as anger, cold drinks, poisons, and the contagion of the air. He concludes that this explains why inflammation of this viscus is concomitant with the plague, small-pox, petechial fevers, retrocedent gout, &c. He says, that Hippocrates had predicted that this disease would be found to have its seat in the stomach. Finally, he reports the result of dissections of bodies where the stomach was found red, livid, and with reddish or blackish spots, the capillary vessels injected, &c.

The treatment of fevers according to Rega, is indicated by the nature of the affection of the stomach, which may sometimes be the effect of an irritation of the *primæ viæ*, produced by the action of irritating matter, though generally, it arises from inflammation.

When the fever depends on the irritation of acrid matters, he recommends the employment of an emetic, and if produced by gastritis he prescribes antiphlogistics. He observes, "*cavenda tamen et fugienda sunt cane aut angue pejus, cathartica ac emetica, si vel minima phlogosios sit*

suspicio :” and afterwards “ quique diaphoreticis vehementibus sudores elicere cupiunt, non eliciunt, sed magis aucta solidorum crispatura, inflammationem, ad gangrænismum disponunte.” Consequently, we are not to confound fevers, that depend on gastritis, with those that have their origin in irritating crudities. He endeavours to give the signs by which we may distinguish them : we must premise, however, that these last ideas are to be found in Baglivi.

Intermitting fevers are treated of in the latter part of chap. xii. Having given the description of a febrile paroxysm, Rega demonstrates that the origin of these fevers is in the stomach, both by the nature of the symptoms, and the treatment and authority of the most celebrated physicians—many distinguished writers having considered the seat of intermitting fevers to be the *primæ viæ*.

By Sylvius these fevers are said to arise from an obstruction of the pancreatic duct—Willis, from an irritating matter exercising an action on the stomach ; and Fernelius, as we already seen, locates them about the *præcordia*.

The nature of the symptoms which are manifestly derived from an affection of the stomach, proving, according to Rega, that these fevers have their seat in this organ, is confirmed by the effect of the treatment. An emetic diminishes, arrests and sometimes cures an intermitting fever—and it is well known that the cinchona taken internally, cures these fevers as if by enchantment. They are also cured by the extracts of some plants, by bitter styptics, by corrosive sublimate and the caustic poisons, according to the testimony of Friescius, who in his treatise on poisons observes, “ si centum essent caustica venena, tot essent anti febrilia remedia ;” also, by almost all substances having an action on the stomach.

What Rega has asserted acquires greater weight, by the observations of Van Helmont on hectic fever, of which he thinks that the seat is in the stomach, and the exacerbations in exact relation to the irritation of that organ, and also, by the phenomena that take place during digestion in some persons. We are told by Hecquet, that these experience a

pain in the head, heat and redness of the face, a general sensation of fatigue, pulsation of the temples, and frequency of pulse—while others, according to Rega, from a want of power of the stomach, experience a chill after taking a meal, and feel an oppression of the chest, with difficulty of respiration, and a small and contracted pulse—these symptoms lasting till the heat of skin returns: from all the above mentioned circumstances Rega concludes, that the seat of the generality of continued fevers and of almost all intermittents, is the stomach.

In chapter xiii. our author observes, that, from what he has said and is about to say, most diseases are derived from the stomach, and that the principal action of remedies is upon it, and that in the practice of medicine, particular attention should be paid to it. To confirm this idea he adds, that the greater number of causes producing diseases, affect this organ primarily. These causes principally are *ingestæ*, the air, and affections of the mind: diseases produced by intemperance are so common that it has become a proverb, "*plures occidit gula quam gladius.*" In truth, the most celebrated physicians in all ages, have treated the majority of diseases by diet, and Hippocrates says, "*qui parum edit et bibit eum nullis humoralibus morbis tentari.*"

As regards the effects that the passions produce on the stomach, he merely cites the passage of Baglivi, wherein he treats of this subject. The fact, that affections of the stomach derange the mind, and reciprocally that passions of the mind affect the stomach, he adds, has caused Van Helmont to say, that the seat of sensation is this latter organ—finally, fear, terror, chagrin, nostalgia, and some other of the moral affections, although having their origin in the brain, nevertheless exercise their action on the stomach.

As to the influence of the air on this organ, our author says, that the north wind augments the appetite, and the south enfeebles it—that miasmata are propagated by it, that it also is a means by which contagion is transmitted, and that the deleterious action of these deranges the stomach

particularly, as we have already observed, with regard to contagious diseases and malignant fevers.

In consequence of these facts, Rega considers the stomach, as does Van Helmont, to be the seat of all diseases—"Sentina omnium morborum," inasmuch as in most disorders it is primarily affected. We find indeed by perusing the accounts of diseases, that the derangement of the gastric functions presents itself as a precursor of almost every violent disorder. It is owing to this constant derangement of this organ, that we think, it is too much overlooked or neglected. Rega supposes, that the action of remedies takes place on the stomach, and by means of it on the rest of the system. This, according to him, is proved by the action of emetics and purgatives, as also by that of diaphoretics, diuretics, absorbents, opiates, &c. for agreeably to the remark of Van Helmont—the primitive nature of medicines, as well as that of aliment and drinks, is changed by the digestive force of this organ. He adds, that the cephalic, pectoral, cardiac, diuretic, and vulnerary remedies, do not act directly on the head, breast, heart, kidneys, or on wounds and ulcers, but that they are changed and elaborated in the stomach: our own ideas on this subject will be given hereafter.

Having established that the source of a great portion of diseases is in the stomach, and that the primary action of remedies takes place on it, our author recommends to physicians to pay particular attention to this organ, in treating diseases: "In medicina facienda præcipue animuna ad stomachum esse advertendum." He adds, that practitioners, keeping in view the delicate and exquisite sensibility of the stomach, and the great facility with which it is affected, and thence sympathetically disorders the economy, should not administer drastic, volatile, spiritous, or other violent remedies, without great caution.—"Opertet enim cavere stomachi vexationem." (Lister.)

Although a writer of the commencement of the eighteenth century, Rega, has nevertheless described the delicate susceptibility of the stomach, the powerful influence it exercises on the system, also that it is the seat of

fevers, of which the generality are inflammatory. He has also indicated their treatment according to the precepts and practice of Baglivi—and finally he has deduced and fixed as a rule for physicians in their practice, whether as regards the knowledge of a disease or the administration of remedies, to pay the most serious attention to the state of the stomach.

He treats of the sympathies of other organs in the remainder of the work. In chap. iv. he examines the sympathies of the head, in the 14th those of the arteries, and in the 15th those of the viscera of the abdomen. In speaking of the sympathies of the intestines, he says, that having a structure analogous to that of the stomach, they have the same sympathies and relations, and communicate their own as well as participate in those of other parts. He considers the digestive canal as a prolongation from the mouth to the anus, and consequently that the stomach and intestines are intimately allied in their sympathetic actions. He also treats of their sympathies with the liver, the kidneys, and particularly with the nervous system, by which they reciprocally transmit their diseases.

He explains this relation as does Vieussens, by the communication of the great sympathetic with the dorsal nerves. He speaks also of the sympathies with the skin and its subjacent parts, and the articulations. He then considers those of the liver and spleen, which he also explains like Vieussens, as arising from the communication of the nerves of the abdominal plexus. He then takes up the sympathies of the mesentery, and believes that many affections attributed to the other abdominal organs are proper to it. “Quot morbi, perperam utero, intestinis, aliisque abdominis visceribus adscripti in mesenterio sedem habent.” As to the sympathies of the kidneys, he agrees with Etmuller, that colics, nausea, and vomitings, arise from their connexion with the intestines and stomach, by means of the mesenteric plexus. He gives, in speaking of their *consensus* with the loins, the following passage from Willis, where he explains these sympathies. “Tanta est sympathia intestinorum cum renibus, et renum cum intestinis et utrorumque cum ventriculo, ut

colicus dolor et nephriticus inter initia communia videantur habere signa et curationem."

In chap. xvi. he treats of the sympathies of the breast—and in alluding to those of the heart, which are general with the whole system by means of the circulation, he remarks that it also possesses particular sympathies with the organs, which receive the influence of the eighth pair and intercostal nerves, and by this means communicates its diseases. He concludes the subject thus: "*cor proxime affici a visceribus abdominis, ut ventriculo, utero, aliisque in eodem ventre contentis partibus, ob illam nervorum communicationem, ita prorsus temendum est, cor affectum vicissim partibus illis mala sua transmittere.*"

In chap. xvii. he treats of the sympathies of other organs, particularly the skin.

Though the theory of Rega is much the same as that of Baglivi, his solidism is more pure and disengaged from the ideas of the humoral pathologists: his physiology and pathology are also less imperfect than those of the Roman practitioner; as he profited by the anatomical labours of Willis and Vieussens, to explain the sympathetic relations: he admits, however, with Baglivi, that they take place by means of oscillation.

In all that we have examined it may be perceived, whether by the opinions of Fernel, Scieta, and Van Helmont, or those of Baglivi and Rega, that it has been attempted to determine the real seat of fevers, which are the only diseases heretofore considered as removed from the domain of organization—as affections purely vital, or as general diseases without a fixed seat—all other disorders have been referred to appropriate organs, and believed to have a particular seat.—In almost all ages, pathologists have placed the affections of the breast and organs of respiration in their true seat, on account of the great facility they found in referring the pain to the diseased organ which gave rise to it: frequently, however, we cannot determine with precision those of the heart and great vessels, but generally attribute them to the affections of the thoracic cavity. The

diseases of the abdominal organs and of the gastric canal, as being difficult in their diagnostic, have been described very vaguely, whether appertaining to one particular organ or to all, as general disease dependent on a morbid state of the vital power.

We shall see shortly that these diseases are now better determined, and consequently the different affections of the abdomen are referred to their proper seats.

There still remain the diseases of the brain, which present great difficulty, as the nervous symptoms that take place from them may also be produced by sympathy—thus they are sometimes referred to their real seat, and at others to the diseased state of some other organ. Still they have always been considered as arising from a local cause, except such as take place in fevers, but these also will be thought to be fixed, when the seat of fever shall be determined on. Hence all diseases may be considered as having a particular seat: and by always considering the symptoms of a disease as arising from its particular organ, whether primarily or sympathetically affected, the true method of studying them on a just and solid basis of pathology will gradually be perfected.

(To be continued.)

ART. IV. *An Essay on Uterine Hemorrhage.* By WILLIAM P. DEWEES. M. D. Continued from No. 9. page 107.

LEAKE* is the most intrepid employer of cold we have met with; he not only recommends its application in uterine hemorrhage, but declares it as his opinion “from repeated experience, that intense cold to the body is more to be depended upon, and will produce more salutary effects, than any thing else that can be devised.” Notwithstanding

* Leake on Woman, vol. ii.

this high encomium, and bold commendation, from a man of great experience, we have our doubts, (and these doubts founded upon multiplied opportunities to ascertain the fact,) of the propriety of this practice, under any other circumstances than those just mentioned. He goes so far as to have the feet and legs plunged into cold water; nor does he confine these applications to a particular state of the system; his practice is predicated upon his theory of the action of cold upon the blood—he supposes the blood to be condensed by it, and is thus, by its greater thickness, prevented from escaping so readily from the vessels.

It would follow then, agreeably to this doctrine, that the greater the cold, and the longer it be continued, the more decided would be its beneficial effects—but this, experience too often contradicts. It would seem to be a law of the animal economy, that almost in proportion to the reduction of the vital energy, is the disposition of the blood to coagulate—and it is but by effecting this reduction of vital power, that cold is useful in uterine hemorrhage; it will be then a necessary consequence, that cold can only be employed to advantage, or even with safety sometimes, where the vital energies require, or will bear diminution, and that this reduction should never be carried, as we have already intimated, to an extent that will prevent reaction, when this may become safe or necessary. Besides, we have very strong doubts of the power of cold, however long continued, to produce a “*condensation*” of the blood, (so long at least as life exists with any vigour,) in deep seated portions of the system, though entirely convinced of its influence over even inordinate excitement, by its action upon the skin and other portions of the body; and also, that when the reduction of temperature is carried to a certain extent, the blood will and does more readily coagulate; but if it be persisted in beyond this, we may extinguish the already too much diminished excitability.

Again, after delivery, the safety of the woman is alone insured by the contraction of the uterus; therefore whenever cold does not do this, its operation is totally unavailing,

however much we may suppose the blood to be "*condensed*," or however disposed it may be to coagulate—indeed, in some instances we have witnessed, we have strong reasons for believing that contraction was prevented by the powers of life being too much depressed by the long continued, and persevering use of ice or other cold substances.

It may be proper to observe in addition to the remedies and modes of proceeding pointed out in this division of our subject, that in certain cases of uterine hemorrhage, the forceps is the only means to be employed or relied upon. They are exclusively indicated—1st, Where the discharge is threatening, and the labour is well advanced; but where the membranes have been long ruptured, and the uterus is firmly embracing the body of the child, or the head does not advance with sufficient rapidity to afford security. 2dly, Where the head is low in the pelvis, and has escaped from the orifice of the uterus—here turning must not be thought of, however recent may have been the escape of the waters, or however moveable the head may be in the pelvis. 3dly, Where the uterine efforts are either feeble or suspended, and where the os uteri is sufficiently distended, but where the waters have been long discharged. 4thly, Where the head occupies the inferior strait, the orifice of the uterus sufficiently expanded, the waters recently expended, but where the natural agents of delivery would act too slowly for the safety of the patient. 5thly, Where the natural powers are incompetent to the sufficiently speedy delivery of the patient, owing either to the *mal* position of the head, or to such a disparity between it and the pelvis as shall prevent its timely expulsion.

Hemorrhage from the Situation of the Placenta.

We must now speak of that hemorrhage which is so appropriately termed the "unavoidable,"* and which, as we

* We are indebted to Dr. Rigby, for this term; he has written a valuable Treatise upon this subject, though anticipated by Levret, in the discovery that the placenta might be originally fixed upon the os uteri. But it would appear it was an original suggestion with him, as well as with Levret, for

have already declared, arises from the peculiar location of the placenta. The first evidence of the placenta being over the mouth of the uterus, may declare itself so early as between the sixth and seventh months of utero-gestation; at this time the neck of the uterus begins to be stretched for the more complete accommodation of the fœtus—in consequence of this, a small portion of the placenta will be separated from the uterus, which will be followed by a discharge of blood, commensurate with the extent of the lesion, and the size of the vessels involved in this destruction. This discharge may, by proper management, be made to cease; nor will it return until the uterus and placenta are again forced to separation—then another perhaps slight hemorrhage ensues, which may also cease, and not be renewed until the last period of pregnancy; or there may be, as happens sometimes, a constant stillicidium of a bloody sanies.

Dr. Rigby, who is considered the highest authority upon this subject, does not seem to have bestowed as much attention to the condition of the patient before the full period of utero-gestation, as he did to the consequences when that time arrived, or he would not have held the doubtful language he did when speaking of the “time and manner” in which the “accidental” and unavoidable hemorrhage came on; he says “*probably* that which is occasioned by the placenta being fixed to the os uteri, will, for the most part, not come on till the full term of parturition, when the uterus begins to dilate from the approach of labour;” which is contrary to the history we have just given, as well as to the experience of almost all the writers* upon this subject. Besides, the very economy of the uterus makes our account correct.

Therefore, when the full time has arrived, the woman may be surprised by a sudden and an alarming issue of blood,

he assures us at the time he promulgated this doctrine, (and no one will doubt Dr. Rigby’s word,) he had never seen that author’s work, and that his “ideas upon this subject were derived from his own personal observations and experience.”—*Essay on Uterine Hemorrhage*, p. 13.

* See Leroux, Kok, Baudelocque, Denman, Burns, &c.

without the smallest premonition it is about to take place—for it sometimes makes its approach so rapidly and so insidiously, that the patient may be attacked in the midst of her domestic duties, or while in the enjoyment of company. At other times it is preceded by slight and distant pains,* and when this is the case the discharge for the most part is neither so sudden nor so alarmingly extensive—for the hemorrhage is never so overwhelming nor appalling, as when the os uteri silently and rapidly yields, and in an instant exposes a thousand bleeding vessels.† The blood flows in an almost unceasing stream, till the woman becomes much weakened and faint; coagula may then form, and a temporary truce ensue; but this in general is both treacherous and but of short duration, especially if pains attend; for the coagula which had partially arrested the hemorrhage are now driven away by the contractions of the uterus, or by the operation of some other cause, as accidental as unavoidable, and the discharge is renewed, with perhaps even increased violence; and in this way do things proceed until the poor sufferer is either exhausted by the waste of blood, or till she be relieved by the judicious and successful interposition of art.

Where the discharge is so extensive and sudden as we have just described it to be, no time should be lost before it be ascertained, whether the flooding proceeds from a separation of a portion of the placenta remotely situated from

* When this species of flooding is accompanied by pain, it will in general be found, that the waste is neither so sudden nor so profuse as when none attends, though each contraction of the uterus augments for the time being the hemorrhage. It must however, be observed, that in proportion to the discharge will be (*ceteris paribus*) the diminution of uterine force—and hence the infrequency of natural deliveries in this kind of flooding. Indeed the pains seem almost to cease, or in other words, the contractions yield almost as soon as they commence.

† This circumstance, however, rarely obtains, but where the woman has arrived at, or very nearly at her full term, and where she has been teased by some previous discharge. May not the pretty constant, though considerable discharge just noticed, contribute to this sudden dilatation by acting as an uniform local depletion?

the os uteri, or from this mass being placed over it—the symptoms which designate these different situations, though perhaps pretty strongly marked, are not sufficiently accurate, to render unnecessary a more certain and decided examination. We should therefore, upon such occasions, always examine the mouth of the uterus with great care and circumspection. In conducting this, the finger merely introduced into the vagina, will rarely be sufficiently accurate to prevent all error; the hand should be conducted into this canal, that the utmost freedom may be given to this important examination. A proper moment, however, should be chosen for this purpose, that no evil may result from this operation—for we have just remarked, that a suspension of the discharge is sometimes effected by a coagulum within the vagina or mouth of the uterus, which being removed in making the examination, may renew the flooding to the decided injury of the patient—while the blood is flowing, is the time to make this attempt.

When the hand has possession of the vagina, a finger should be carried within the os uteri; it should then carefully search for, and ascertain the nature of the substance presented to it—if it be the placenta, it can be easily distinguished from a coagulum, (the only thing that has any resemblance to it,) by the following characters—1st, The placenta always presents a fibrous structure of pretty considerable firmness. 2dly, When this is pressed upon by the extremity of the finger, a sensation of tearing an organized substance is excited. 3dly, It being much firmer in its consistence, and offering more resistance to the play of the finger within it. 4thly, Its not escaping from the finger when its substance is in some measure broken down by the pressure and free movement of it—it can never be mistaken for the membranes.

In a case of such importance, we should neither permit a false humanity, nor a false delicacy, to get the better of an imperious duty—for upon the early knowledge of the species of flooding, the woman's life may unquestionably depend. We should therefore, without reserve, state to the

friends of the patient, our opinion of the nature and tendency of the case, and the importance of ascertaining it by a proper examination. This will almost always be cheerfully acquiesced in, and if it be properly conducted, we shall neither excite any severity of pain, nor wound the most fastidious delicacy. The hand for the most part, from the relaxation consequent upon a constant discharge, will pass without difficulty, or may be made to do so, by proper lubrication. It is true, indeed, that with a first child, and at an incomplete period of utero-gestation, there may be some difficulty in passing the hand, if the discharge has not been pretty abundant—but in this case the examination is not so immediately important—but should it be so, from the excess of the hemorrhage, then the parts will be found almost always sufficiently yielding to permit the passage of the hand without difficulty.

Having determined it to be a placental presentation, the condition of the mouth of the uterus should next be cautiously examined—the degree of opening, and its disposition or indisposition to dilate, should be carefully marked; for on this much depends. It will be found in one of the following situations. 1st, But little opened and very rigid. 2dly, But little opened, yet disposed to dilate. 3dly, Opened to some extent, but very unyielding. 4thly, Opened to the same extent, but soft. 5thly, Fully dilated.

The nature of the case being thus ascertained, the mode of treatment is next to be considered. This will necessarily be much influenced by the particular condition of the woman, and the period at which the discharge may show itself, and make interference necessary. We have already noticed that when the placenta is situated over the mouth of the uterus, slight discharges of blood may take place after the sixth month, as an inseparable consequence of the economy of the uterus at this period; when these are moderate, they may for the most part be arrested by the means usually employed for this complaint when the placenta is not placed over the mouth of the uterus—and they should be put into immediate requisition, and the patient placed under the

strictest injunctions of obedience and conformity to directions. For a discharge of blood at this period is always to be looked upon as being capable of extreme augmentation, and we should never lose the suspicion, that it may arise from the situation of the placenta. We have no decided mark by which the "accidental" may be at this time distinguished from the "unavoidable," unless we make a full examination—now, this can never be necessary so long as the flooding is moderate; we think, however, we have observed in the "unavoidable," that the flow of blood is more sudden and copious, in a given time; and is more fluid and florid than in the accidental; and in the commencement, is never accompanied by coagula; and when pain attends the discharge, is always increased at each contraction; but in cases demanding precision, these marks cannot be relied upon—from the proximity of the bleeding vessels to the os externum, the blood will issue so quickly from the injured vessels, as to appear both more fluid and more florid, than in the accidental species; for in the accidental, the blood may escape remote from the os uteri, and be obliged to travel slowly through the meshes of the connecting medium of the ovum and uterus; and hence will appear less florid and fluid, and be more disposed to coagulate. But coagula will form in the "unavoidable," when the discharge is about to cease, either by proper treatment, or by the mere efforts of nature; and it is but in this way that a stop is put to farther waste.

As we cannot in the commencement of these early discharges, determine the situation of the placenta without much pain and force, it may always be well to treat them as if they were cases of placental presentations, as in doing so we shall be erring on the safe side—we should insist upon the most perfect tranquillity of the body and mind, and an almost constant indulgence whenever practicable, in an horizontal position. Blood at this period may be taken from the arm, if the arterial force be too great; cold applications should be resorted to, and the sugar of lead be exhibited in sufficient doses either by the mouth, or by enemata as already

advised. Kok and others recommend cold astringent injections to be thrown into the vagina, of the utility of which, as we have said before, we have much doubt—at least we have never been much tempted to employ them. We rarely pay any attention to the state of the bowels, unless they be very costive—then a mild, warm injection of molasses and water, or soap and water, will be every way sufficient. We are thoroughly convinced that much mischief is frequently done by the exhibition of even the very mildest purgatives; and the reason will be immediately obvious, when we consider the effects of them. We have frequently permitted our patients under treatment for uterine hemorrhage to be five or six days without a discharge from the bowels, and when we have thought it necessary to stir them, it has for the most part been by mild injections.

Kok also advises the introduction of some substance, such as lint or rags, into the vagina, well imbued with a fluid styptic, such as a strong solution of alum, or of wine in which alum is dissolved. We should place more reliance upon this latter means than upon the former; as it would in some measure act as a tampon, and serve as a point *d'appui* for coagula to form upon; for at last we must have these to form, if the hemorrhage stop without having done much mischief. We have advised bleeding when the pulse is active; Kok says this is useless, if not injurious, in this kind of flooding. But in this we cannot altogether agree with him, at this period of utero-gestation, and for the following reasons:—1st, Under any kind of active hemorrhage, when the pulse is vigorous, the taking away blood from the arm has uniformly been found useful, by producing contraction by the mere unloading of the vessels, and more especially in diminishing the velocity of the blood within them. 2dly, At the period we are speaking of, as we cannot, from the contingencies just mentioned above, decide with certainty that the discharge is from the peculiar location of the placenta, without manifest violence, we may act as far as the bleeding is concerned as if it were an “accidental” hemorrhage, especially as the blood detracted will not seri-

ously weaken the woman, and as there is a strong probability that it may be arrested until the last period of pregnancy, by proper applications and treatment. 3dly, That at the time this accident shows itself, it is for the most part from the mechanical separation of a portion of the placenta, which will not generally be renewed for some time, as these vessels, and the other connecting media, possess considerable elasticity, therefore time will be given for the formation of coagula, provided the proper means be pursued to favour their production, among which we must reckon bleeding. 4thly, If the fluor be not produced by external violence, or any other cause which will certainly excite the action of the uterus, there is a strong probability that the discharge will cease for the time being, unless it be improperly treated, or unnecessarily provoked.

Should any cause whatever excite the contraction of the body and fundus of the uterus at this period of pregnancy, and the discharge be rather the effect of such contractions, than the natural and unavoidable stretching of the neck, we have great reason to fear, that we shall not be able to suspend these efforts, so as to enable the woman to go her full term of gestation. But we should ever have this intention in view, as it may sometimes be happily fulfilled; and if it be not, it is decidedly the most proper mode of treatment. In such cases, we should endeavour, as quickly as possible, to interrupt uterine contraction; for this purpose, we should bleed under the restrictions just mentioned; we should exhibit the sugar of lead with laudanum, as frequently as the exigencies of the case may require; and by enemata, we think, is much the most prompt and efficacious mode of administering them. From a scruple to a half drachm of this salt, with a drachm of laudanum, and a gill of water, may be thrown up the rectum every hour, or more seldom, as occasion may call for them. All the auxiliary plans we have already recommended should be put in requisition, and their full adoption rigidly enforced. Should these means moderate the discharge, and the blood be found disposed to form coagula; and if at the same time

uterine contractions have ceased, or even to have considerably diminished, we may be encouraged to persevere in the use of the remedies we are employing, and at the same time entertain an expectation of future success. The introduction of a moderate sized tampon at this time, as a mere point d'appui, we are persuaded is highly useful, for without some such support the coagula may be discharged, and the hemorrhage renewed.

The artificial support for coagula, of which we have just spoken, is of more consequence than we should at first sight imagine. It permits the thinner parts of the blood to escape through the meshes of the sponge, by which means the coagula are rendered more firm and tenacious, besides diminishing, by a counter action, the influence of the vis à tergo, which is constantly operating to throw them off. We are aware that some would rely upon the coagula without it, and we must admit that they have occasionally been sufficient to save the woman's life; a case of this kind is related by Leroux,* but he expressly declares they are not to be relied upon. The sudden movement of the woman's body for even necessary purposes, uterine contraction, the escape of the waters, &c. may all serve to derange the coagulum which has arrested the hemorrhage. But the most important use of the tampon under these circumstances remains to be mentioned, which is, that it causes the coagulation of the blood, merely by presenting a surface favourable to this change, long before this disposition would otherwise successfully show itself; for in general this effect is not produced, but when the woman is much exhausted, or by the rather tardy though successful influence of the remedies previously employed.†

Should all our endeavours, however, fail to arrest the discharge, we should, without further loss of time, ascertain the condition of the os uteri, and then proceed pre-

* Observations, p. 258.

† Mr. Burns assures us he never saw a case which required delivery during the first paroxysm, if a proper treatment had been adopted.---Principles of Midwifery, 5th edition, p. 323.

cisely as if the woman had arrived at her full time when the hemorrhage commenced ; for it will now be found, they are reduced exactly to the same condition, and will require the same mode of management ; of which we shall speak more at large presently.

A woman may escape these anticipating discharges until she completes her full term ; but at this time it will be seen that the uterus cannot expel its contents without *necessarily* exposing the patient to the most imminent risk. So alarmingly profuse, and so suddenly dangerous, are these discharges in some instances, that a few minutes are sufficient to exhaust the strength, or deprive the woman of existence. We once witnessed a case in which there was discharged from the uterus, in the course of about fifteen minutes, a full half gallon of blood ; and we were sent for in another instance where the woman had expired before our arrival, though there had not, as the midwife assured us, more than a half hour passed from the commencement of the flooding to its fatal termination. These are, however, extreme cases, yet they show how suddenly and certainly they may be alarming or fatal. It is confessed, upon all hands, that no accident attendant upon conception is equally menacing as the disease in question, and emphatically declares to the physician, that upon him much depends, that it shall not be very often fatal. It is one of those extraordinary cases in which nature does less for the preservation of the individual than almost any other. This does not arise so much from want of exertion, if we may so term it, as from the almost entire incompatibility of giving birth to the child, and affording safety to the woman, at one and the same time. Yet we learn from such authority as cannot be doubted, that the woman, left entirely to herself, will not always perish. The mode, however, in which nature affords this security, neither offers to us any practical hint, nor holds out the smallest inducement to imitate her ; for the very means are so entirely contingent, and sometimes so long withheld, that the woman, from her great exhaustion, can scarcely be said to profit by the interposition.

Baudelocque* says the woman may be preserved "when the orifice is fully dilated, and the mass separate entirely from it, and be so far removed from one side, that the membranes may present. The membranes may then tear spontaneously, and delivery be performed naturally, if the woman, notwithstanding her loss of blood, still preserves sufficient strength, as has sometimes happened." Leroux† by the formation of coagula, and the spontaneous action of the uterus. Smellie‡ to the entire separation of the placenta, rupture of the membranes and the placenta being first delivered, &c. &c.

From this it would appear, that in some rare instances the woman has been saved, by the natural agents effecting the delivery before she was too much exhausted; but that we do not profit by the knowledge of the manner in which this was performed. It is therefore now, completely established, that the only chance the woman has for life is by a well timed and well conducted delivery in every case, *ceteris paribus*, of placental presentation.

Though it be universally admitted, that, in the cases we are now considering there is but one certain mode of proceeding, yet it is not so generally conceded that it is essential to the entire success of that mode, that the delivery be properly timed, and as properly conducted. All who have written upon this subject, seem to agree in one of the positions, namely, that delivery is absolutely necessary; but many, and indeed we may add but too many, have been regardless of the conditions which serve to render this operation availing. It would be but a needless repetition, to cite authorities in proof of this, as we have already animadverted upon the same error when speaking upon the practice of forcing the uterus in the accidental hemorrhage, when not readily disposed to yield. The same or perhaps more sudden mischief would follow this rashness in the cases under conside-

* System of Midwifery, Vol. II. par. 986.

† Observations &c. P. 306.

‡ Midwifery, Vol. II. Col. 18. No. 3. Cases No 3, 4, 5, 6, 7.

ration, than in the former; for the flooding would almost always be increased, in addition to the evils already pointed out.

The time *when* we shall attempt delivery, is of the greatest moment, and deserves particular investigation. Dr. Denman says, "It would be of great advantage in practice, if some mark were discovered, or some symptom observed, which would indicate the precise time when women with hemorrhages of this kind ought to be delivered;" but declares "we do not at present know any such mark." Yet almost immediately after decides, that "whenever the case demands the operation, on account of the danger of the hemorrhage, the state of the parts will on this account always allow it to be performed with *safety*, though not with equal facility." If this be true, we are certainly in possession of what Dr. D. thought so great a desideratum—for if the parts be in a condition to turn with *safety*, it is certainly all that is required, when "the danger of the hemorrhage demands the operation." For if the parts permit turning with out risk, they must be in a dilated or a dilatable state, and this is all that is or can be required when the condition of the flooding "demands the operation." Then we have a rule which is never failing, when this condition of the parts obtains if it be true, that this can always be done with *safety*, if not with equal facility.

Now, it is of importance to inquire whether turning can always be performed with *safety* when the parts are in a condition to permit it; for upon this much depends. It would seem agreeably to this position, that the whole risk the woman runs in these cases arises from the "state of the parts" opposing the introduction of the hand; and when they do not, that then turning may be performed with *safety*—experience constantly contradicts this unqualified opinion; for the woman may be so far reduced, that she may expire before the operation is completed, or very quickly after.* Besides, the opinion stated, in the manner we

* Of this we have ample proof in Cases 58, 81, 82, 89, 98, &c. of Rigby, in each of which, the condition of the parts *easily* permitted turning, but

find it by Dr. D., would lead to the persuasion, that so long as the os uteri was not opened there could be no danger, whatever might be the quantity discharged; than which nothing can be more unfounded. For it is a well known fact, that the powers of the uterus may be so far impaired, as not to perform this office, even at the last moment of existence. In this we are supported by Rigby,* who declares, that were "this rule invariably adhered to, in some cases, it would be attended with danger, as we might wait for the opening of the uterus till it was too late to relieve the woman by turning the child." This will be very readily understood, when it is recollected, that the opening of the uterus mainly depends upon the longitudinal fibres acquiring the mastery of the circular,† but when the uterus is so far exhausted of contractile power, as to remain passive or nearly so, we shall always find the os uteri closed, (unless previously distended by an exertion of its powers) though most easily *dilatable*. We may perhaps even acquiesce in the explanation of Dr. Rigby‡ upon this subject, when he supposes that the position of the placenta may serve to keep the uterus closed, by surrounding its mouth, and the attachment of its fibres to this part, which is now perfectly passive and unresisting—this is both ingenious and probable.

We must now make a distinction of great practical importance, that has never, so far as we know, been attempted; which if it be just (and our experience gives us every reason to believe it is) will in some measure serve to reconcile the conflicting opinions of writers upon the subject of the *time* when it would be invariably proper to attempt the relief of the patient by turning—it is simply this, that there

not with *safety*—but we are clearly to be understood, that we attach no censure to the operation, for we are of opinion it was the only thing that could be done to give the woman a chance, and we have no question but it was properly performed. But these cases go to prove the incorrectness of the position we are now examining.

* Essay, Ed. 6th, p. 40.

† See Essay on the means of lessening pain, &c.

‡ Essay, Ed. 6th, p. 40.

is a most material difference, between the dilatation of the os uteri, or even its dilatability when effected by the natural powers of this organ, and that passive or quiescent condition which results from the languor of death. The one is the result of its organization when its powers are not impaired or prostrated by disease, while the other is a syncope, if we may so term it, produced when these powers are exhausted by an excessive waste of blood. This distinction must constantly be kept in view, for on it depends the rational mode of treating this most formidable complaint; for if it be not, we prescribe both uncertainly and empirically. An attention to the one leads us to husband with the utmost care, the strength and vigour of the patient; while the neglect of it makes us regardless, if not prodigal of it; the one is almost always crowned by success, the other makes us constantly anticipate a doubtful issue.

We can readily account, with this distinction in view, for the difference of success in the operation of turning—when it has been effected under the dilatation of the uterus by the natural agents, it has perhaps almost always been attended by the much desired issue; but when performed, when the flaccidity of approaching death had ceased to make it difficult, it but too often was followed by the loss of the patient. Under this impression then, we should say, that when the os uteri was either dilated or dilatable by the spontaneous operation of this organ, before the strength of the patient was materially impaired, that then, and then only, was the desirable time to operate; but, that if circumstances prevented advantage being taken at this proper moment to relieve the patient, and nothing but a choice of difficulties remain for us, we should certainly attempt arresting the woman from her impending fate, under the cautions already suggested.

But we will attempt to put this subject in a clearer point of view, by considering what ought to be attempted for the relief of the patient under each of the conditions of the uterus above pointed out, and which necessarily comprehends every state it is at this time susceptible of.

First, where the Uterus is but little opened, and is very rigid.

In this situation of the uterus, all the evils we have already enumerated, when speaking of a delivery under our second division, when the uterus was in this condition, would attend a forced delivery at this time—it must not therefore be thought of, however high the authority may be that recommends it. Indeed, this has ever been a case of great embarrassment to the practitioner; and in but too many instances makes him at variance with himself, or he gives his directions so obscurely, and so hesitatingly, as to confuse the judgment of the young practitioner.* It has given rise to two modes of proceeding, each of which is equally wrong. The first is, to force the uterus, however rigid, provided a finger can be introduced; we have already said a good deal upon this plan, and shall only add in proof of it a quotation from Dr. Rigby,† highly illustrative of the impropriety of this outrageous practice. “In recommending early delivery, I think it right, however, to express a caution against the premature introduction of the hand, and the too forcible dilatation of the os uteri, before it is sufficiently relaxed by pain or discharge; for it is undoubtedly very certain, that the turning may be performed too soon as well as too late, and that the consequences of the one may be as destructive to the patient as the other. I am particularly led to observe this, as I have lately been informed, from very good authority, (namely, a gentleman to whom one of the cases occurred,) of three unhappy instances of an

* For an instance of this kind we may give even Mr Burns himself—he tells us in one sentence, “if the hemorrhage have been or continues to be considerable, we must not wait until the os uteri be much dilated, as we thus reduce the woman to great danger, and diminish her chance of recovery;” a few lines farther, in the same page, he says, “a prudent practitioner will not violently open up the os uteri, but will use the plug;” a little farther on he declares, “he, (a prudent practitioner) will not allow his patient to lose much blood, or have many attacks; he will deliver her immediately, for we know that whenever that is necessary, that it is easy, the os uteri yielding to his cautious endeavours.” *Principles*, Ed. 5, p. 324.

† *Essay on Uterine Hemorrhage*, p. 40, Ed. 5.

error of this sort, which happened some years ago to three surgeons of established reputation, who, from the success they had met with in delivering several who were reduced to the last extremity, were encouraged to attempt it where but very little blood had been lost, in hopes that their patients' constitutions would suffer less injury, and their recovery be more speedy; which, till the experiment was made, was a very reasonable supposition—the women died, and they seemed convinced that their deaths were owing to the violence of being delivered too soon, and not to the loss of blood or any other cause.” The other is, to permit the flooding to proceed until the woman shall be so much exhausted as to render the uterus pliant. Dr. Denman, as we have just noticed, supposed that when danger created the necessity for delivery, that then, from the loss of blood, the uterus would permit it with safety. Dr. Rigby says, that when the uterus contracts firmly round the fingers, we should desist from any attempt to deliver, and wait till the part be more relaxed by pain or discharge; and adds, “as an encouragement, that we may safely suffer a woman to lose more blood, the contraction may certainly be looked upon as a proof that there still remains a considerable portion of animal strength, and that she has not been so much affected by the loss as we before imagined.”

We cannot recommend this plan, though it be the advice of the first authority extant upon this subject; we are convinced from both reason and experience, that it is never (perhaps) necessary, and is always injurious—to save the woman an ounce of blood is, as we have already declared, a duty; to save her forty or perhaps much more, is a still stronger one—to follow then the speculation of Dr. Denman, or the advice of Dr. Rigby, would be widely departing from that duty—we do not nor cannot adopt them. What is essentially important to be done in this case? 1st, To save as much and as quickly as we can, the further expenditure of blood—2d, To obtain, as soon as the natural powers will effect it, the dilatation or dilatability of the ute-

rus—3d, To then deliver with as much speed as is consistent with the welfare of both mother and child.

The first and second of these indications are, as far as we have witnessed for the last thirty years, readily complied with by the use of the tampon, and the other auxiliary remedies—it should be instantly had recourse to, and the discharge will almost immediately abate, and in a short time be so diminished as to give no immediate concern for its effects; by this means we not only stanch the hemorrhage, but gain most important time; for during this truce the natural agents of delivery will effect the desired relaxation of the os uteri. This plan, we believe, originated with Leroux, and has been adopted with entire success by ourselves for many years past. It has also the sanction of Mr. John Burns, who recommends it by saying, “a prudent practitioner will not violently open up the os uteri at an early period, but will use the plug, until the os uteri become soft and dilatable.” It is true, Gardien thinks the plug will do harm, by exciting the uterus, and thus increase the separation of the placenta—but this is theory; it is not consonant with experience.

The following case, selected from several of a similar kind, will show, in a clear point of view, the promptness and efficacy of this plan. Mrs. —, while looking out of her window, was suddenly surprised by a profuse discharge of blood from the vagina. Before we arrived, though near at hand, more than a half gallon of blood was expended upon the floor and in a pot. When we saw the patient, she was upon the bed, pale, feeble, and excessively alarmed. We immediately examined her, and found the uterus rigid, and the placenta presenting. She had no pain, nor had she any previous to the eruption of blood. The discharge was very profuse and exhausting, but as the os uteri was none dilated and rigid, we instantly introduced the tampon, which was secured within the vagina by a compress upon the external labia with a T bandage. The flooding ceased immediately, and there was nothing passed the os externum but some of the thinner parts of the blood. After the tampon

had been applied about four hours, pains commenced pretty briskly, and in about two hours more they were of considerable force, so much so, as to press against the external compress with some violence. We now removed the tampon, and the os uteri was found sufficiently dilated to allow the hand to pass with entire freedom—the delivery was quickly effected, and with safety to both mother and child.

For the successful fulfilment of the third and last indication, it is necessary the practitioner should be well acquainted with the condition of the uterus at the moment he is about to commence the operation—that is, he should know how far he may rely upon its co-operation, or how far it may be capable of that degree of contraction as shall secure the woman against a farther loss of blood: this can only be presumed by taking into view, the quantity of blood lost, the debility or exhaustion it has occasioned, and the degree of force the uterus may exert at each return of pain. If, then, it be found that the quantity of blood be not excessive; if the degree of exhaustion be not alarming; and if, above all, the uterus manifest considerable vigour, the delivery may be accomplished in much shorter time, and with a much greater promise of success, (especially to the child,) than if the contrary of all this obtained; in the latter case, the delivery must be conducted with the most cautious circumspection, that the uterus may not be too suddenly emptied of its contents, and thus augment the danger to both mother and child. We shall again advert to this subject when we come to describe the manner of conducting the operation of turning, or effecting the delivery.

Secondly, when but little opened, but disposed to dilate.

In this situation of the uterus, in general but few obstacles to turning or delivery will present themselves, since, if the necessity of the case require the operation, the great objection to it is in some measure removed; for this disposition to yield to a moderate force, will secure the woman against an excessive loss of blood, by our taking advantage of this condition, and effecting the delivery in proper

time. But it must be recollected, that though the uterus may be disposed to yield to a certain extent to even a moderate force, if it be slowly and judiciously applied, yet it may refuse to relax beyond this ; or to such an extent as would not embarrass the operation ; nor can it be made to yield beyond this degree, unless a dangerous or reprehensible force be applied.* In a case of this kind, we should gain time by the employment of the tampon, as directed above, and not subject the woman to unnecessary risk by attempting to overcome the resistance by violence ; and it must also be recollected, that in cases like these, cases so replete with risk, that we are to devote ourselves to the best interest of our patients,—they should never be subjected to the chance of a fatal hemorrhage by our leaving them even for a short time ; for neither the plea of other engagements, nor a persuasion they can receive no injury during a short interval of absence, can justify our withdrawing ourselves from them : we could cite a number of instances in support of this, were such confirmation necessary. If it be judged necessary to employ the tampon, we should wait patiently for its effects ; but we should wait at the bed-side, or near the person of the sufferer, that we may take immediate advantage of any favourable change in the condition of the parts, and for which we were so anxiously looking ; or guard against any unfavourable contingency that may suddenly or unexpectedly arise.

Sometimes, indeed, the os uteri appears entirely closed, when at the same time it is easily dilatable ; this case should not be confounded with the one just considered ; for here the woman may be readily delivered, should the urgency of the case require it. This situation of the uterus for the most part only takes place when the woman is almost exhausted, and the powers of the uterus so far impaired, that the agents for the *absolute dilatation* of its orifice are incapable of the effort. Should we wait for the expansion of the os uteri in such instances, we should wait in vain, and

* Leroux, Mauriceau, Rigby, &c.

perhaps even be made to witness the death of the patient.*

Thirdly, opened to some extent, but very unyielding.

Were we to consult authors upon the point of practice that would bear upon this condition of the uterus, we should find but too many to sanction a forced delivery—while some others would severely reprehend it. We must employ the same arguments here as have been used against any violence being committed upon an unyielding uterus; it may sustain as much injury in the condition supposed here, as in the former instances we have been considering; for if the opening be insufficient to permit the hand to pass without the employment of force, it will certainly be insufficient to allow the fœtus to pass without using much more; it should therefore be considered full as ineligible to operate in this case, as in the two former we have just noticed. Besides, there is less excuse to be precipitate in this case, since the desired relaxation will most probably soon ensue, as the os uteri has already yielded to some extent; therefore by giving it a little more time by employing the tampon, the delivery may be accomplished without either violence or risk.

Had we no command of the hemorrhage, we perhaps might be justified in the employment of force, as it would then be a dernier resource; but as we can certainly control the discharge, (as far at least as we have yet experienced,) by the tampon, we should be inexcusable to attempt delivery, until it had been properly tried, and it had failed.

But let this case not be confounded with the next condition to be mentioned; let it be certainly ascertained that the uterus, though opened to some extent, is, notwithstanding, very unyielding—a young practitioner may in the confusion and embarrassment created by the exigency of the case, easily run into such an error; to prevent this, he should carefully examine the os uteri by placing or rather hooking his finger within it, and then drawing the edge towards him; if it

* See Rigby on Uterine Hemorrhage.

readily yield to a gentle force thus applied, he may be pretty certain it will stretch by a well directed one used within its circle. But in conducting this examination, we must caution him against a mistake he may readily make if he be not put upon his guard; which is this—he may mistake the movement of the whole os uteri for a portion of it, but this error may without difficulty be corrected by deliberately performing the examination, and attending strictly to the following marks—if a rigid os uteri be drawn, say towards the pubes, its edge against which the finger is placed will maintain its rigid feel, and if the finger is made to pass round the whole of its circle it will be found to be uniformly stiff and round, and not any or very little enlarged by the effort made upon it—but on the other hand, if the os uteri be *dilatable* beyond the size we suppose it to be by the touch, it will be found soft; and will yield without difficulty to the effort made to stretch it; and if the finger be then allowed to pass round it, it will be perceived to be of a lengthened shape, and to have been entirely obedient to the force employed to draw it forward.

Fourthly, where opened to the same extent but soft.

We have just declared, an error may be committed by an inexperienced or timid practitioner in this condition of the uterus; and we have pointed out the method by which it may be instantly corrected; it therefore behooves him not to neglect to entirely satisfy himself as to the situation of the os uteri, before he finally makes up his opinion on the proper mode of practice. A careless or ill conducted examination may in this instance lead to the loss of the patient; for, by mistaking the *absolute* diameter of the uterus for the *possible*, he may delay operating so long, as to render it totally unavailing; for we perfectly agree with Dr. Rigby,* that however important it may be as a general rule, that the uterus must be opened to the size of a shilling or an half crown before any attempt is made to introduce the hand, yet if this rule be rigidly enforced, “it would in some

* Rigby, p. 42.

cases be attended with danger, as we might wait for the opening till it was too late to relieve the woman by turning; and for this reason it seems right we should be sometimes as much influenced by the os uteri being in a state *capable of dilatation* without violence, as by its being really open.”* In our directions for the management of cases in the second condition of the uterus, we noticed this situation of this organ, and remarked that it usually occurred when the woman had flooded to excess—but we have known at least two exceptions to this.

Fifthly, where fully dilated.

When a case presents this condition of the uterus, there can be no hesitation about the proper mode of proceeding, if the exigencies of the case require instant interference; for here all objection is removed to the operation of turning, as far as any mechanical injury to the uterus is to be feared—but this is a rare case; and when it does occur it would seem to happen but under the following circumstances:—1st, In those women who are wont to have very rapid, and very easy labours. 2dly, Where the *edge* of the placenta extends over the os uteri, and where in consequence of this, the hemorrhage has not been sufficient, though pretty profuse, to seriously injure the contractile powers of the uterus. 3dly, Where the pains have been so rapid and powerful, as to suddenly dilate the os uteri, and cause the head to carry the placenta some distance before it.

In the first case, the hemorrhage will be of the most profuse and alarming kind; and if the woman be not very quickly aided, she will most probably die—this was the case with the poor woman who lost her life before we could get to her assistance—here, not a moment is to be lost; turning must be instantly had recourse to.

In the second instance, the discharge, though perhaps very free, is never so overwhelming as in the first, for the edge of the placenta may be passed over the os uteri but a small distance, and the flooding will of course be in propor-

* Rigby, p. 43.

tion, as this may be more or less extensive—in these cases the membranes may even present, rupture spontaneously, and thus save the woman ; here the natural agents may accomplish the delivery—but more of this by and by.

In the third case, the flooding will be perhaps for a period as alarming, and, for the time of its continuance, as profuse as in the first—but the uterus acting promptly and vigorously, the head of the child is made to press so effectively upon the mouths of the bleeding vessels as to arrest the hemorrhage*—here we must act according to circumstances ; if we see the patient during the time of her profuse flooding we should not hesitate a moment to deliver, even though the pains be brisk, for it is entirely contingent that the discharge will be stopped by the intervention of the head—but should we not see the patient until by the progress of the head the bleeding be arrested, we should not interfere, but commit the case to nature.

It has been recommended by some, to rupture the membranes in the expectation of stopping the hemorrhage, as it frequently does when the placenta is not fixed at the mouth of the uterus—but this should never be done, especially before the uterus is well dilated or easily dilatable, and for the following reasons : 1st, Because they cannot be reached without great difficulty in some instances, and in these cases when they are reached, it is either by piercing the centre of the mass, or separating a portion of the placenta, and thus increase the bleeding surface. 2dly, When they are pierced and the waters evacuated, it will very rarely stop the hemorrhage. 3dly, When it does not do this, we are sure to have the difficulties of turning increased. 4thly, That should the flooding for the moment cease after the discharge of the waters, it is sure to return as the pains increase, and as the uterus expands. The only exceptions to these rules are the cases just mentioned above, where the membranes present themselves in part.

Baudelocque assures us he never saw but one case, where the hemorrhage ceased after the discharge of the waters,

* Baudelocque, Leroux, &c.

and that was where the placenta was first delivered by a midwife, and the head of the child was made to press so firmly on the mouths of the bleeding vessels as to stop the hemorrhage.*

It may be inquired, what mode of relief is to be pursued, in placental presentations, when they happen at or near the sixth month? These are truly embarrassing cases when they occur, as for the most part, the uterus is not sufficiently enlarged to admit the hand to turn, and the hemorrhage is sometimes very alarming; the great risk in these situations arises from the want of disposition in the os uteri to dilate; and before this is accomplished, the woman sometimes succumbs from the unrestrained flow of blood. But women in this situation, even when unaided, do not necessarily die, nature being now and then competent to the task of delivery.† We may remark as a general rule, and as a consolatory circumstance, that nature, if not interrupted, or when given the best chance, will almost always effect the expulsion of the ovum, previously to, or soon after the sixth month, without the manual interference of the accoucheur—for the most part then, in such cases, our attention should be directed to the diminution of the hemorrhage by such palliatives as we have constantly in our power; among these the tampon stands foremost.

This remedy should be early employed, as it will by proper management, save a prodigious expenditure of blood; we gain by its application important time; time that is essential for the successful delivery of the fœtus—for by it, the woman's strength is preserved; pain is permitted to increase, and eventually, though tardily, the os uteri is dilated, the placenta and fœtus thrown off, and the flooding almost immediately controlled. The other means which we have constantly pointed out, should also be tried—they may aid the general intentions, and render the operation of the tampon more certain.

We have the examples of Mauriceau and others, to at-

* System, Vol. II. par. 982.

† Rigby, Leroux, &c.

tempt the relief of the woman by manual exertion in these cases; but we should, neither from the history of their cases, nor our own experience, be tempted to recommend this plan. We are persuaded from our own observations, (which, however, we do not wish to be taken for more than they are worth,) that the temporizing mode we have just suggested, is the proper one to pursue—Leroux long since adopted this method, and we have for many years but trod in his footsteps; and it is but just and proper to add, we have had abundant reason to be satisfied. Dr. Rigby, though by no means confident of the efficacy of the tampon, confesses in the cases we are now considering, it might be used with propriety—had he put this plan in execution, we are persuaded he would have been satisfied with its effects, and would unquestionably have prevented his giving the hazardous advice, “to wait for relaxation,” by permitting the patient to flood until the collapse almost of death, should effect it. Experience has often convinced us, that the relaxation of the os tincæ, so desirable in the cases we are now considering, will be as certainly achieved by time, as by this excessive expenditure of blood; and this time procured by the *interruption of the flooding* by the tampon. When we effect this by this means, we assuredly gain a great deal—strength is saved by saving much blood, and the woman’s future safety is almost insured; for as a general rule we may declare, that when no violence is committed upon the uterus by an attempt at forced delivery, the only thing we have to apprehend, are the consequences of the hemorrhage.

When the woman is farther advanced, say at the seventh month, artificial delivery may most generally be effected,* provided we do not destroy the advantages this period gives us, by improper treatment;—for instance, the rupturing of the membranes, and the consequent discharge of the waters; it should therefore be especially guarded against. An attention to this point in these cases, is more important than at the full period, notwithstanding the advice of some accoucheurs to the contrary.

* Leroux, Rigby, &c.

It now only remains to describe the mode of effecting the delivery, when it is judged proper it shall be performed. In doing this, we can give only general directions for the situation of the woman, as we cannot, from her extreme weakness and other causes, always command the most proper or convenient; it may nevertheless be proper, when we have a control, to say what in our opinion, is the best—that disposition of the woman's body which will give us the most entire command of the uterus and its contents, will certainly be the most proper for the accoucheur, and also the safest for the woman; and this position is upon the back; the knees drawn upwards, by the feet being supported by two chairs placed near the bedstead and before the patient; the breech drawn over the edge of the bed so as to have the perinæum free of it; proper materials should be placed between the woman's back and the bedstead, that she may not suffer from its hardness; and the shoulders should be rather depressed, though the head may be a little elevated by a pillow.

The floor beneath the patient should be protected by a blanket, oil cloth, carpet, or any thing else which will answer the purpose—a pot should also be placed below to receive the discharges as they may drain off during the operation—the woman should be covered in such a manner as to prevent all exposure; she should be sustained in her position by each knee being supported by one of the attendants.

The accoucheur should take such measures as shall protect his clothing from injury, but should avoid all unnecessary parade of apparel—he should bare his arm and have it and his hand well lubricated. He should place himself before the patient in such a manner as will give one of his hands the entire command of the abdomen during the introduction and turning with the other—this is a direction of more consequence than might at first be imagined; for by the hand which is applied to the abdomen we can, in great measure, counteract the force of the one which is making its way to the fundus of the uterus, and thus prevent a portion of this body, and that of the vagina to which it is

joined, from being put upon a painful stretch—we can judge by it the degree of contraction the uterus may exert, and also promote this end by gently stimulating it by moderate friction.

Many accoucheurs, and especially the British, recommend the patient being placed upon her side ; we have ever found this less convenient, than the one just suggested ; and have always, where the situation of the woman would, without injury, permit a choice, adopted this method. The advantages of this position are, first, we may employ either hand as may be most convenient to the practitioner, without changing the situation of the patient. Secondly, we always have one hand at liberty to co-operate with the introduced one, by placing it upon the abdomen. Thirdly, we can pass the hand more readily in the axis of the superior strait, by having the perinæum free over the edge of the bed. Fourthly, we can regulate the discharge of the liquor amnii, ad libitum, a matter sometimes of great moment. But it must be remembered, we are never to attempt to procure these advantages by moving the patient when that movement would be injurious to her—therefore when she is very weak or faint, we must operate as well as we can in the position we find her—this is sometimes very awkward and inconvenient, but these are of no consideration, when the life perhaps, of the poor sufferer, is to be put in competition with our ease. There is not for the most part, much to be apprehended from merely changing the woman from her back should she be lying upon it, to her side ; but a greater change might be very mischievous ; we are therefore frequently obliged to do this before we can operate, as it would be almost impossible to turn, when the patient's back and hips are some distance from the edge of the bed.*

Should circumstances, or choice, induce us to deliver from the side, we always give a preference to the left, provided an election can be made. The hips should be drawn near

* We must always remember to have pressure made upon the abdomen by a judicious assistant, when we deliver the woman upon her side, as we cannot in this position, as when she is upon her back, perform it ourselves.

to the edge of the bed, and made as salient almost as may be, by the flexion of the body and the drawing up of the knees—in this position, the left hand is to be used, as with the right it would be very difficult to operate, owing to the axis of the superior strait being very much in advance. If on the right side, the right hand should be employed, and for the reason just stated.

The woman being properly placed (if in our power,) the hand should be gently and gradually introduced into the vagina, and then into the mouth of the uterus, separating the placenta and membranes from it as it advances towards the fundus—when arrived here, the membranes should be broken by pressing firmly against them; but the waters should not be permitted to escape but at our pleasure. We can command this almost always, as our arm fills up the os externum, and prevents its passing out—from time to time we permit some to escape by pressing the arm firmly against one side of the vagina, until it is sufficiently evacuated; the object of this gradual discharge of the waters, is at once obvious, as it prevents the uterus from falling into a state of atony, by its being too suddenly deprived of them. The feet are now to be seized, and the conversion made by drawing them down to the superior strait—we should now allow a little time for the uterus to contract; when we are assured it has done so, either by pains declaring themselves, by the child advancing farther into the pelvis without our exertion, or by the firm and hardened feel of the uterus through the parietes of the abdomen, we may most safely proceed with the delivery to its termination.*

But should the woman be very much exhausted before we commence our operations, we should use additional caution in the delivery—it should be very slowly performed, and we should have, at each step of the process, assurances

* It is not our design to be very minute in our description of turning, as it is precisely the same as in every other instance of labour which requires this operation, and with which every practitioner of midwifery is supposed to be well acquainted.

if possible, that the uterus has not lost, or rather that it possesses sufficient contractility to render the completion of the operation eventually safe, if performed with due and necessary care.

We are advised by some, to pierce the membranes by the hand ; but this should never be done, especially as it is impossible to assign one single good reason for the practice, and there are several very strong ones against it. 1st, In attempting this, much time is lost that is highly important to the patient, as the flooding unabatedly, if not increasingly, goes on. 2dly, In this attempt we are obliged to force against the membranes so as to carry, or urge the whole placental mass towards the fundus of the uterus, by which means the separation of it from the neck is increased, and consequently the flooding augmented. 3dly, When the hand has even penetrated the cavity of the uterus, the hole which is made by it, is no greater than itself, and consequently much too small for the fœtus to pass through, without a forced enlargement, and this must be done by the child during its passage. 4thly, As the hole made by the body of the child, is not sufficiently large for the arms and head to pass through at the same time, they will consequently be arrested ; and if force be applied to overcome this resistance, it will almost always separate the whole of the placenta from its connexion with the uterus.* 5thly, That when this is done, it never fails to increase the discharge, besides adding the bulk of the placenta to that of the arms and head of the child. 6thly, When the placenta is pierced, we augment the risk of the child ; for in making the opening we may destroy some of the large umbilical veins, and thus permit the child to die from hemorrhage.†† 7thly, By this method, we increase the chance of an atony of the uterus, as the discharge of the liquor amnii is not under due control.

* Baudelocque.

† Ibid.

‡ Dr. Denman confesses, though he recommends the searching for an edge of the placenta, and penetrating it, that in performing the latter, "there is rather more danger of losing the child." Denman's Midwifery, Francis' Ed. p. 484.

8thly, That it is sometimes impossible to penetrate the placenta, especially when its centre answers to the centre of the os uteri; in this instance much time is lost, that may be very important to the woman.*

It is a mistake to suppose we produce a greater separation of the placenta when we pass the hand between it and the uterus, than we do when we pierce the placenta; but if it were even true, it would be no objection to the method we advocate; since, both uterus and placenta are pretty firmly compressed by the arm in its passage to the fundus, and the bleeding by this means restrained; and as this is the only objection which is raised against the method we recommend, we shall consider it as completely answered by what is just now said.

Should the placenta not be found entirely detached from the uterus after the birth of the child, we should give a little time for it to separate spontaneously; and we must endeavour to promote this by friction upon the abdomen over the uterus, unless the flooding continues to be violent; it will then be proper to pass up the hand and separate it, for it may be the bulk of the placenta which keeps up the hemorrhage, by preventing the uterus from closing sufficiently upon the bleeding vessels.

Before we proceed to the consideration of the third division of our subject, it may be well to inquire into Dr. Rigby's opinion concerning the nature of the uterine vessels; which we are content to call arteries. He says, "the uterine vessels differ very materially from arteries, and particularly in having no such power of contraction within themselves, their contraction and dilatation being absolutely dependent upon the state of the uterus. In the unimpregnated state they are so small as scarcely to be discovered; but they are well known to increase when the uterus receives the ovum, and to grow in exact proportion to its gravidity; and when by the complete distention of it, they have acquired their utmost magnitude, their diameters cannot be

* Dr. Rigby admits this, and declares he has "more than once found it." Rigby, p. 64.

lessened until the womb, being again emptied, closes them by the contraction of its whole capacity, and restores them to their original size."

There is no circumstance in this history that would lead us to reject the idea, that a part of the uterine vessels are arteries, and for the following reasons—1st. The spermatic and hypogastric arteries furnish the uterus with these vessels; and it is well known that they increase in proportion as gestation advances; consequently, vessels which all agree are arteries, enlarge and in almost the same degree as those within the substance of the uterus, and which are but continuations of them. 2dly. No physical difference has ever yet been discovered between them.

These two circumstances we consider in themselves as conclusive of the identity of the uterine, and the spermatic, and hypogastric arteries. If this were not so, why should these vessels enlarge in proportion to each other? and why should the spermatic and hypogastric arteries contract when delivery has taken place, without being dependent for this effect upon the "contraction of the uterus?" Now let us see what would really present itself, were Dr. R.'s opinion substantially true; he declares in the unimpregnated state of the uterus, that these vessels "are so small as scarcely to be perceived;" now, how should this happen if they possessed no contractile power within themselves? The mere contraction of the uterus could not alter their real capacity; it could only change their form by strongly compressing them; therefore, if what he supposes were even true, they should constantly present to us the shape of flattened cylinders, or puckered tubes; but the contrary of all this appears when we cut into the substance of the uterus, for we then find that though the vessels are "so small as scarcely to be perceived," yet, those we do see, present to us constantly a circular form.

That they do not contract during pregnancy, or immediately after delivery, as closely as arteries in many other parts of the body do, we admit, not because they do not possess contractility in an equal degree with them, but be-

cause they cannot exert it to the same extent in consequence of their peculiar connexion with the general substance of the uterus—they are every way surrounded by and connected with cellular membrane,* which will permit them to lessen themselves but to a certain degree so long as the muscular fibres of the uterus remain in an uncontracted state, and for this plain reason, that the sum of their power or disposition to shut themselves up, is inferior to the power which keeps them in some measure upon the stretch. But that they do diminish in size to a certain degree after being exposed by a separation of a portion of the placenta during pregnancy, we have no doubt, as the cellular membrane by which they are surrounded will from its elasticity† permit them to do so, and thus contribute to the suppression of hemorrhage.

We must regard the uterus during gestation as in a state of coercion—every part and portion of it sooner or later is put upon the stretch; consequently the vessels entering into its substance, must enlarge with it, or put the cellular membrane by which they are surrounded upon the stretch; but as there is a most important intention to be fulfilled by their enlargement, they are found to augment in a ratio correspondent to the distention of the uterus; and they are not only made to yield in proportion to the increased demand

* We are not wishing to be understood that there is any thing peculiar in the uterine arteries being surrounded with cellular membrane, for we are aware that this obtains wherever there are arteries; we wish merely to insinuate an opinion, that they have positively less freedom than the arteries in other parts of the body, by being more closely tied by their connecting medium, and that, as we shall immediately say, for very important uses; and that they have relatively less, would appear evident, when we reflect on the immense increase they suffer during gestation, and though they may contract very considerably, yet it may be insufficient to stop their bleeding without the co-operating contraction of the muscular fibres, for the reason we shall presently assign. Levret makes the proportion of the unimpregnated uterus to that of the impregnated, to be as eleven and an half to one; now if the arteries augment, (as is reasonable to suppose they do,) in the same proportion, it will be seen how much their calibres must be reduced before their contraction alone can stop hemorrhage.

† Bichat, *Anatom. Gen.*

for blood, but are also kept in that state by its constant influx, to supply the exigencies of the uterus in a state of gravidity. This condition of the uterine vessels then have two causes contributing to the same end—namely, the unfolding and separating of the fibres constituting the proper substance of this organ, and the constantly increasing tide of blood which flows within it—the first, if it does not directly contribute to the enlargement of these vessels, will to a certain extent favour it, by taking off that restraint, which a state of contraction imposes upon them, and thus make them more easily obedient to the impulses of the spermatics and hypogastrics—the vis a tergo then of these vessels may be considered as essentially contributing to their distention. Hence, we can no longer recognise the almost imperceptible vessels of the unimpregnated, in the large canals, if we may so term them, in the advanced impregnated uterus.

Let us now suppose the supply to the uterine vessels to be cut off by any means whatever, and we make a section of the uterus near or at the full term of gestation and while yet occupied by the ovum—what will this section discover to us? One of two things certainly—either the vessels small and contracted, or still patulous and large. If in the first situation, Dr. Rigby's opinion of their nature is at once proved to be unfounded; if in the latter, will it not confirm the notion we entertain, that they are kept in this situation by force as above suggested? If this be true, will not the same cause operate the same effect, when the uterus is emptied of its contents, but remains in a flaccid and uncontracted state? And will not the same consequences follow from the same cause in both instances, namely, a discharge of blood from the separation of the whole or a part of the placenta?*

* We might also insist, that should the uterine vessels be found large and patulous when the flaccid uterus was cut into, that it would not confirm Dr. R.'s opinion, should the explanation just offered not be admitted; as it might be a reasonable conjecture to say, that the cause which is capable of producing an atony of the muscular fibres of the uterus, may also be capable of rendering the uterine arteries passive, and that consequently

If these statements be true, (and we sincerely believe them to be substantially correct,) it will follow, that the uterine arteries cannot contract sufficiently to stop hemorrhage, however eminently they may possess contractility, so long as the muscular fibres of the uterus are in an uncontracted state, because their peculiar connexion with them will necessarily prevent it—and farther we believe, that this kind of union is highly important to the uterus after the expulsion of the fœtus, to enable it, or perhaps we may say to induce it, to contract, to throw off the placenta, and prevent after hemorrhage. They perform this valuable end by lessening themselves and obliging, in a certain degree, the muscular fibres to follow them—this proves an extensive and congenial stimulus, which for the most part is successfully exerted to this end—but should the contractile fibres of the uterus be indisposed, or unable, from the action of any cause capable of this effect, to manifest this power, hemorrhage must necessarily ensue; for the arterial extremities which are exposed by the separation of the placenta will and must remain open, not because they do not possess the faculty of contraction, but because it cannot be successfully exerted for the reasons we have already assigned—therefore, for hemorrhage to cease, requires the co-operation of the contractile fibres of the uterus; and to make them obedient to this end, is the great aim of all our exertions.

From a review of the inquiry we have just made, it will be evident, that as far as regards effects, there is but little difference between Dr. Rigby and ourselves; but as regards structure and function, there is considerable discrepancy—our object in this attempt, is the removal of error, and not the expectation of any great practical advantage, though we are persuaded some benefit may be derived from these considerations in the cure of hemorrhages of this kind—for upon the notion of the uncontractibility of the uterine arteries, Dr. R. condemns the use of that class of medicine we

this uncontracted condition of them, would tend to prove that this was really the case, rather than that they had never been endowed with the power of self diminution.

all astringents; now, we have declared, we have frequently found advantage from the sugar of lead in such cases, (and we have recommended its employment with no inconsiderable confidence,) which must be admitted to be an astringent, and one of no common power—in the *modus operandi* of this medicine we may be mistaken, but we cannot be in its effects. There may be many other substances belonging to this class, that may be equally or even more efficacious upon trial; but we are to be deterred from employing them because the uterine arteries “cannot contract of themselves.”

(To be continued.)

ART. V. *Thoughts on Climate and Epidemic Diseases.*

By CHARLES CALDWELL, M. D.

THE pastoral and wandering nations of Asia and Africa excepted, the inhabitants of the United States, especially those of the western region, surpass all other people in their love of emigration. To such an extent is this true, that a propensity to change their place of residence, constitutes in their character a very prominent feature. The father communicates the feeling to the son, and the son to his descendants, until it would seem to become a hereditary attribute, and almost an evidence of legitimacy of descent.

Let it not be imagined that I speak thus of my fellow citizens in a spirit of reproach: far from it. In the present condition of things, the practice to which I have alluded is to be regarded as a virtue, rather than a fault—as the result of a manly spirit of independence, rather than of a feverish instability of purpose. It is a leading cause of that rapid population and improvement of the wilds of the west, which have so far surpassed the calculations of the native, and strike with such astonishment the mind of the foreigner.

But as nothing earthly is perfect, so nothing is absolutely and exclusively beneficial. From the very best of the measures and movements of man, the many alone can derive advantage, while the few sustain unavoidable injury.

Of this indissoluble mixture of evil and good, is the issue of the practice of emigration compounded. While the general condition of the country is benefited, and the fortunes of many individuals ameliorated, the hardy emigrant too often suffers severely in his health.

As this rarely fails, or indeed can fail to be the consequence of families removing to a distant residence, in whatever direction the removal may have been made, it is somewhat important to inquire into its cause, with a view to ascertain, as far as may be practicable, in what way and to what extent the evil may be averted. The investigation is certainly curious in philosophy, and may be rendered, as I conceive, advantageous in practice.

In relation to the first part of this inquiry, it might, by common minds, be deemed sufficient in me to say, that emigrants from places far remote suffer in their health, *because they have sustained a change of climate*. And to the truth of this reply no objection can be fairly stated: it is founded in nature and substantiated by fact.

But with so brief a solution of a problem so important, no philosophical inquirer either would or ought to be satisfied. On the subject to which it relates it throws no light, because it enters into no analysis. It appears in the shape of an arbitrary assertion, unaccompanied alike by illustration or evidence, deriving its weight from common sentiment, and addressing itself only to popular belief.

My purpose, therefore, is to solicit attention to a brief exposition of the term *climate*, and to an attempt to show why a change of it is so generally prejudicial to the health of emigrants. Of the remedies for this evil, a want of time will most probably, on the present occasion, prevent me from speaking to the requisite extent: but an opportunity of recurring to the subject may hereafter present itself.

Climate is a term of Greek origin, derived from the word

klino, to lie, to incline, or to be depressed. In its usual acceptation, it signifies a tract of earth, a region, or a certain place in the heavens, marked by a given condition on the atmosphere. Hence we say, a climate is cold or hot, wet or dry, steady or variable, or that it is characterized by some other sensible and specified quality of the air.

Considered in a medical point of view, climate is, in its meaning, a term of greater compass. It embraces every attribute, whether favourable or unfavourable to health, which the atmosphere derives from prevailing heat or cold, moisture or dryness, or marked vicissitudes from one of these states to another—from prevailing winds, topographical situation as to elevation, depression, exposure, or the existence of mountains, hills or plains—from proximity to the ocean, to inland seas, to large bodies of fresh water, including the peculiar qualities of the waters, and to extensive tracts of country of a healthy or unhealthy character—from the general nature and character of the soil, whether dry, humid, or marshy, sterile or fertile—and from the state of its cultivation, and its vegetable productions. To these elements of climate, which are both numerous and complicated, is to be added the influence of different kinds of diet, and of different customs, manners, habits, and other moral considerations, which, accommodated to climate, are as really its offspring as the vegetables and animals that constitute its inhabitants. For the experience of man imposes on him a general conformity to the nature of the climate in which he resides, and this conformity is in no small degree operative on his constitution and liability to disease, as well as on the nature of the diseases he experiences.

Medically speaking, then, the climate of a place is the same with the aggregate of the qualities of the atmosphere of that place, together with certain moral influences which this aggregate controls and modifies.

According to this definition of the term, all living beings, whether vegetable or animal, are the creatures of the climates they respectively inhabit. If these climates do not

actually create them, they so far influence and modify them, as to give to them their peculiar constitution and temperament.

When we take a survey of the earth, in its existing condition, passing over it either personally or in contemplation, from one climate to another, we are impressed with this truth at every step of our progress.

The vegetable and animal productions of the old world we find to be exceedingly different from those of the new—some of them in kind—while others of the same kind present themselves to us under striking dissimilarities. In our own country, the productions of the north are essentially different from those of the south, and those of the intervening regions differ from both: the productions of the eastern states are different from those of the western, and the native growth of the hills and the mountains from those of the contiguous vallies and plains. Nor, in this respect, do maritime differ less from interior regions, or humid tracts of country from such as are arid, even when both are on the same elevation and in the same latitude.

In fact, the native productions of all distant tracts of country, whatever may be their bearing with regard to each other—whether east, west, north, or south—differ very strikingly in appearance, constitution, and character: and this difference arises from a difference of climate. Hence, that constant interchange of commodities, and that general commercial intercourse, which bind together the remotest regions of the earth, and, by rendering them to a certain extent, dependent on each other, cultivate between them the relations of benevolence. So true are the words of the poet,

“All nature’s difference keeps all nature’s peace.”

From this controlling influence of climate, man himself is not exempt. He feels it not only in his aspect, his stature, and his strength, but in his constitution, his temperament, and predisposition to disease.

Not confined to impressions on his exterior, it finds its

way into the utmost parts of him. Moulded each by the power of his climate, the man of the north, even in our own country, differs materially from the man of the south, the native of the mountains from the native of the valley and the plain, and the inhabitants of the eastern from those of the western section of the union. Perceptible now, this difference will be much more striking hereafter, when on our native inhabitants climate shall have produced, in the different sections of the country, the maximum of its impression.

It is then that the real man of America will present himself in his perfect character, corresponding in his person and all his efficiencies, corporeal and mental, to the boundless outline, and magnificent features, of the hemisphere he inhabits.

The difference arising out of climate and situation, is still more strongly marked in certain districts of Europe, than it is, as yet, in any section of the United States.

In confirmation of this, it is sufficient to adduce a simple comparison between the Cretin and the Mountaineer in the region of the Alps. Feeble, diminutive, fatuous, and deformed, exhibiting scarcely an attribute of humanity, the former vegetates in the climate of the valley, while lofty, well proportioned, vigorous and highly gifted, the latter, in the chase or in agriculture, displays his energies near the mountain top.

From these remarks let it not be imagined that I consider the power of climate competent to the mutation of one race of men into another—of the African into the European, the European into the North American Indian, or the latter into the Hindoo, or the diminutive Laplander. Through the medium of the press, as well as in several courses of public lectures, I have already announced my deliberate belief, that no cause or combination of causes, physical or moral, *now in existence*, is capable of effecting this transfiguring process. It is the result of causes which have either ceased to act, or which act no longer with their primitive force. Climate, in the utmost extent of its influ-

ence, can only effectuate varieties in the same race of men, not the conversion of one race into another. Out of one original stock it can *probably*, in the lapse of ages, produce a German, a Frenchman, a Spaniard, and an Italian. But the formation of an African out of the same stock, is *physically* impossible—to be done alone, by the power that created man.

Considered then, on the *principles of medical philosophy*, which in the present case, is only another form of expression for the *principles of his own nature*, man, no less than the flower he crops, the fruit he makes his food, or the grass on which he treads, is the creature of climate. But he does not, like most of the forms of living matter around him, belong of necessity to a single region. Flexible in his constitution, and taught to regulate and defend himself by reason and experience, he is capable of passing from the *being* of one climate to that of another—from the inhabitant of the frozen heights of Nova Zembla or Terra del Fuego, to that of the burning plains of Congo or Malabar.

But this transition cannot, with safety, be immediately effected. It does not belong to man to sustain in his system, without injury, any great and sudden change. Were he to pass instantaneously from youth to manhood, from manhood to old age, or from the fervours of summer to the intense and permanent rigors of winter, the vicissitude, if not destructive, would be certainly injurious. It could not fail to engender disease.

Nor can he, at once, and with impunity, exchange the temperament or constitutional peculiarity of the mountain for that of the valley or the plain, the temperament of the north for that of the south, or the reverse, nor the temperament of any one region or tract of country for that of another distinct and remote. To be effected with safety, the change must be gradual, like that of the system from youth to old age, or like the gliding of the seasons from winter through spring to summer, and from summer through autumn back to winter.

But when the inhabitants of one climate, bearing along

with them all the corporeal peculiarities, external and internal, which, by a long continuance of impressions that climate has imparted, emigrate to another, they subject themselves, not to a gradual, but an immediate constitutional change. As a new system of impressions has succeeded to the old one to which they had been accustomed, a new system of effects, accommodated to those impressions, must necessarily follow. until the full completion of the process of acclimation. Under these circumstances, the *existing* condition of the constitution being entirely unsettled before *another* can be produced, it is hardly to be expected that disease can be escaped. As well might we expect an eye, long exposed to entire darkness, to bear with impunity an intense and sudden blaze of light, as that the general system should sustain without injury a change at once so striking and precipitate.

In relation to the effects of a change of climate on the human constitution, no less than with regard to most other physical topics, various popular errors prevail, one of which it is important that I should notice and endeavour to correct.

The *general*, I might perhaps say the *exclusive* belief is, that, to prove deleterious, the change must be from the north to the south—from a colder to a warmer atmosphere.

This, although an error exceedingly palpable, is altogether pardonable, when radicated only in common minds. But by the philosophical and the reflecting, it ought to be rejected, the evidence of its fallacy being accessible and abundant.

In the United States, as well as in most other countries, the tide of emigration sets almost entirely in a southerly direction. When man removes from the place of his nativity, he manifests for the most part, a strong predilection to go nearer to the sun. The prospect of liberal gain, on easier terms than he can obtain in the bleak and boisterous climates of the north, invite him thither. If a few individuals emigrate occasionally in a different direction, they

pass unnoticed, swallowed up in the overwhelming current of those that seek the south.

It is the effects, then, of southern emigration only that we have an opportunity to witness. Of those of emigration to other quarters we make no account. In as much as these effects amount usually to a subversion of health, it is on the ground of belief that all opposites are necessarily dissimilar in their operation, alleged by the unthinking, that emigration in a contrary direction must prove salutary.

Than this opinion none can be more unfounded. It is by the mere circumstance of a change of climate that man is injured, not by the direction in which that change is made. Even a removal from the maritime district, low, flat, and unhealthful, of the Atlantic States of America, to the more elevated and salubrious region of the hills, is often productive of an attack of disease. This is more especially the case, in relation to individuals in the decline of life. Let those who have spent their youth and prime of life, near the seaboard, in the Carolinas or Georgia, beware of emigrating to the interior on the advance of old age.

Emigration, in our country, from east to west, across the mountains to a place on the same parallel of latitude with that from which the emigrants set out, rarely fails to engender the affection denominated a seasoning. Did the tide of emigration flow in a contrary direction, the natives of the western states pouring into those of the east, the result would be the same. An acclimation or seasoning would await the adventurers.

Nor is this all. Because, during the summer season, we see many of the enfeebled inhabitants of the south retreating from the sun, to reinvigorate their constitutions by fresher breezes and a cooler atmosphere, we seem inclined to believe, that health alone exists in the north, the south being the only nursery of disease.

But a moment's reflection must convince us of our mistake. Do we not on the approach of winter, see the consumptive, the dyspeptic, the rheumatic, and invalids of other descriptions, hastening to the south in quest of that health

of which the north had deprived them? And is it not a fact, that they are oftentimes materially benefited by the experiment?

When the natives of the north emigrate to the south, they are attacked by the diseases of summer and autumn. Let the natives of the south emigrate to the north, and they will become victims of the complaints of winter. The latter will experience diseases of the chest, of an inflammatory character—the former, those of the abdomen, marked by more or less of gastric and hepatic derangement.

The natives of New England, in the summer and autumn, venture with great caution to visit New Orleans, lest they be attacked by yellow fever: let the natives of Louisiana, who wish to escape catarrh, peripneumony, quinsey, and pulmonary consumption, be equally cautious of a winter residence in the climate of New England.

Were a thousand Louisianians to make a permanent exchange of residence with an equal number of Canadians, or of the inhabitants of any of the New England States, I feel persuaded that, among the former, in common years, the average of the annual bills of mortality would be higher than among the latter: the average of disease would certainly be higher. For although the maladies of the south, when they occur, may be most malignant and mortal, those of the north are most numerous. Except during about three months of each year, Louisiana is healthier than Massachusetts.

In one point of view, emigration to the south would seem to be much less hazardous than that to the north. When emigrants have once passed through the process of southern acclimation, they have but little to apprehend from subsequent attacks of it. But northern acclimation gives no such exemption. So far is this from being the case, that one attack of it rather predisposes to another. Nor is this all. The diseases of the north are much more numerous, I repeat, than those of the south. Indeed in the latter region, I might almost say that there is but one disease,—bilious fever under its several forms.

On the measures which emigrants should pursue, to avert or mitigate the process of acclimation, a want of time forbids me to dwell. They must depend very materially on the character of the climate, and therefore on the nature of the disease that is apprehended.

By means of the diaphragm the body is divided into two great cavities, the thorax and the abdomen. In the former of these are many of the most formidable complaints of the north, and of hilly and mountainous countries, in the latter, nearly all the complaints of the south, and of flat and marshy countries, mainly radicated. It is only the most malignant cases that extend their ravages through both cavities.

In the prevention of every disease, temperance is highly efficient—in that of the diseases of the abdomen it is essential. On the abdominal viscera does intemperance primarily expend its force. These organs it so debilitates and deranges, as greatly to diminish their powers of resistance, and facilitates, in an equal degree, the invasion of them by morbid agents. In predisposing, therefore, to diseases radicated below the diaphragm, it is a leading cause.

To vicissitudes in the atmosphere from heat to cold, and from dryness to moisture, are we to attribute mainly the diseases of the thorax. But those vicissitudes act chiefly on the skin, their agency on the lungs being comparatively inconsiderable. In thus acting, they prove an exciting cause of both abdominal and thoracic complaints.

Let emigrants, therefore, who would escape the diseases whether of the north or the south, practise temperance, and protect the skin by suitable clothing against the agency of humidity and cold. Let them further avoid unnecessary exposure, fatigue, and all excesses, adapting these several measures to the peculiar character of the situation where they reside, and should they not succeed in averting disease from a change of climate, they cannot fail to weaken its force.

Success in preventing or moderating that affection denominated a climature, depends, in no small degree, on the

season of the year in which emigration is effected. Propriety of season, again, depends on the direction in which the emigrant moves. If he remove from north to south, let him emigrate about the close of autumn: if his course be in a contrary direction, let him emigrate in the spring. If he go from east to west, or the reverse, to a place of the same latitude and temperature with that he has left, the season of emigration is of little moment.

From these desultory thoughts on the cause and prevention of climature, I pass to a few remarks on epidemic diseases. Whether we consider this in a practical point of view, or as an abstract topic of medical philosophy, it is a subject surpassed by none in interest and importance.

By an epidemic, we are to understand a disease which overruns communities, embracing, at times, in its grasp, entire and extensive tracts of country. Of this we have striking exemplifications in influenza, measles, and scarlatina, the former of which, in particular, has often, in the space of a very few months, pervaded the whole of the United States, and on several occasions recorded in history, compassed in its march, almost every country in the old world, with which we are acquainted.

Another instance, scarcely less memorable, we find in the disease which has prevailed for some time past, in most parts of our country, from Maine to Louisiana, and from the shores of the Atlantic to the waters of the Missouri.

Although epidemic diseases have been attributed, at times, to the agency of insects or animalculæ, to damaged provisions, or to impure waters, they are now considered almost universally, as having their source in the atmosphere. But great errors still prevail, respecting the condition of the atmosphere requisite to their production, as well as with regard to the causes from which that condition arises. Passionately devoted to tangible agents, in preference to those that are more concealed, most men, I might have said, most physicians, look for causes that are palpable to sense.

Those who thus sternly and unconditionally condemn speculation in others, are themselves rarely remarkable for

either compass, activity, or elegance of intellect. In the existence of that which they can neither see, hear, taste, smell nor feel, they are so unwilling to believe, that they can scarcely be induced to bestow on it a moment's attention. They tell you, as if in derision, that it is a matter of theory or speculation, about which they give themselves no concern—as if to theorize or speculate were not the same as to think.

Conformably to this coarse and dejective spirit of investigation, the epidemic of the season that has just terminated, is ascribed by some to excessive heat, by others to the combined influence of heat and a superabundance of rain, by a third class to heat and a long continued drought, and by a fourth, to the influence of certain topographical situations, because in those situations the complaint has proved unusually severe.

Before, however, discussing the subject of its course, let us examine, for a moment, the history of our epidemic. It has been already observed that the disease exists in almost every section of the United States. But, within that vast range of country, there has prevailed, during the late season, in different sections, a very striking variety and even contrast, in relation to the sensible qualities of the atmosphere—while, in point of topographical position, many places equally sickly, are perfectly dissimilar.

In Pennsylvania, Maryland, and some parts of Virginia, the temperature of the summer has been moderate, and the drought unprecedented, yet there the epidemic has prevailed.

In the Carolinas and Ohio, there has been nothing peculiarly remarkable in the season, heats and rains having been in their ordinary proportion, yet *there*, in like manner, the disease has been prevalent.

Kentucky has been inundated by rains, and the season has been hot, and *there* we have also had to encounter the epidemic.

Louisiana, Mississippi, and Alabama, appear to have enjoyed their ordinary season, yet in some parts heretofore found healthy, they have experienced a most fatal epidemic.

To the condition of things in Indiana, Illinois, and Missouri, similar remarks are equally applicable.

Nor is it only under tracts of atmosphere differing in their sensible qualities, that this disease has perpetrated its ravages. It has appeared in situations, which, in a topographical point of view, are the very opposites of each other.

In some of the Atlantic States, it has been confined almost exclusively to the dry and hilly grounds, the low, flat, and humid tracts of country having, for the most part, escaped. In the States of the west, the reverse of this is true, the hills being more healthy, and the low grounds of water-courses the theatre of disease. Yet, under all these different circumstances the complaint is the same.

In relation to its mere existence, then, our epidemic would seem to be independent of all local and perceptible causes, a certain degree of temperature alone excepted. By those causes it is modified, but not created. Its aspect on the hills is somewhat different, from that which it exhibits on the plains, in the vallies, and along the water-courses. Yet in all those situations *it appears*, and does not, therefore, owe its *being* to the topographical character of either.

It is worthy, however, of remark, that, although this disease has occurred amid circumstances thus strikingly diversified, it has been most malignant in flat situations, where the rains have been abundant and the heats excessive.

To what cause, then, is its existence to be attributed? I answer, to a general epidemic constitution of the atmosphere. What is the nature of this constitution, or whence it is derived, is entirely unknown to us. Whether it consist in some adventitious but undiscoverable matter thrown from the earth into the atmosphere, or in an excess, deficiency, or unusual arrangement of some of the natural elements of that body, it would be fruitless to conjecture. Its existence is discoverable only in its effects. By no experiments performed on the atmosphere have philosophers yet attained a knowledge of it.

By looking into the general history of epidemic diseases, we find, that, in different ages and countries, this atmosphere

ric constitution has occurred at irregular periods, continued an indefinite length of time, and at last disappeared, without disclosing any vestige of the cause of either its rise or its decline.

During its continuance, the course of nature is usually marked by great irregularities. The seasons exhibit many and often striking deviations from their common character. The winters are unusually cold, or unusually moderate, and the summers unusually hot, or cool, or rainy, or dry, or exhibit a combination of several of those qualities. Contrary to the character of the climate, thunder-storms, hurricanes, and other commotions of the atmosphere are frequent and violent, or entirely wanting, and the heavens are oftentimes illuminated with meteoric fires. Vegetation is uncommonly luxuriant, or sickens and fails, giving rise to damaged or scanty provisions: parasitic and cryptogamous plants spring up abundantly,—dead organic substances putrefy with unwonted rapidity, and the country is infested by insects and reptiles, sometimes of a strange and nondescript character.

These phenomena, some of which have been usually regarded as the cause of the prevailing disease, are most probably nothing more than concomitant effects, arising from a *common* cause. The same derangement in the atmosphere which is the real source of the epidemic, directly or indirectly produces them. As a powerful agent in all these phenomena, it is not, perhaps, improbable, that atmospheric electricity is materially concerned.

Let me not be misunderstood on this subject. Although much is to be attributed to a general cause, local ones are not to be overlooked.

In producing the epidemic of the past season, local exhalation from the surface of the earth necessarily co-operated with the constitution of the atmosphere. Without the exhalation, the disease could not have existed—nor could that cause alone have given rise to it. It was the result of the conjoined operation of both. It is by no means certain that this exhalation arises always and necessarily from the putre-

faction of animal and vegetable substances. Facts are not wanting, which seem to show, that this is not the case: for the disease has appeared in many places where no discoverable putrefaction existed. Even in towns and large cities, we oftentimes speak of putrefaction as the cause of a disease, when we can find no more of that process where the complaint prevails, than in other places which are exempt from it. Yet I am perfectly persuaded, that to the production of our summer and autumnal epidemics, exhalation from the surface of the earth is essential. It mingles with the atmosphere when possessing the proper constitution, and engenders disease. The hypothesis which would derive these complaints from contagion, is unworthy of our notice.

The best mode of preventing those maladies, and of escaping them when they exist, are matters of great moment in the economy of society. To prove successful, the measures to this effect must differ in different situations, and under different circumstances.

Over the general constitution of the atmosphere man has no power. On that, therefore, in the prevention of disease, he cannot operate—nor can he escape from it, at times, unless by retreating to a distant region.

With regard to exhalation from the surface of the earth, the case is different. In a town or a city, cleanliness is the great and only resource. This must be effected in a way corresponding to the nature of the place—and of the filth to be removed. Pure water and free ventilation are the chief agents. A current of air cleanses the atmosphere, and a stream of water the surface of the ground.

If the object be to restrain and subdue exhalation in the country, let the ground, if humid, be effectually drained, thoroughly cultivated, and closely covered with a dense and vigorous crop of vegetables. A covering of trees and underwood produces, to a certain extent, the same effect. The end in view is to avert putrefaction, by the removal of putrefiable substances, or by the prevention of that process in such as may remain. To this effect, let all practicable measures be vigorously pursued.

To escape the deleterious influence of exhalation, when it exists, keep without the sphere of its action. This may, perhaps, be done in two ways. By removing from the place where the exhalation prevails, or by living above its reach.

This atmospheric poison rises certainly only a limited height above the surface of the ground. It does not extend to the top of the atmosphere, contaminating the entire mass. The precise elevation to which it ascends has never been ascertained. There is good reason, however, to believe, that it does not reach the tops of houses of the common height.

During the prevalence of this exhalation, then, could the inhabitants of a town or city live entirely in the third stories of their houses, without ever breathing or swallowing the atmosphere of the lower ones, they would, with no small degree of probability, escape disease. But as this is impracticable, let them adopt at least, the *principle*, and conform to it as far as circumstances will admit.

It is a fact not to be contested, that to sleep in a deleterious atmosphere, is much more injurious than to be vigilant and active in it. In confirmation of this, instances in abundance might be readily adduced.

During the prevalence of this exhalation, then, let the inhabitants of the place where it exists, if they cannot pass their nights entirely without its limits, sleep in the third stories of their houses, and it is confidently believed that many of them will thus escape disease, which they would otherwise experience. If the exhalation ascend to this elevation at all, it is certainly in a diluted and weakened condition. Hence, the danger from its influence must be proportionably diminished.

In corroboration of this opinion, it is well known, that when in Constantinople, Aleppo, and other cities of the east, Europeans retire to a domestic quarantine, during the existence of the plague, they escape the disease by confining themselves to the uppermost floors of their houses.

In like manner, in the maritime districts of Maryland, Virginia, the Carolinas and Georgia, those persons who

sleep in upper stories, are, in the autumnal season, most exempt from bilious fever.

In case of the oriental pestilence, I know it is said, that those who live on the upper floors of their houses escape it, because they thus avoid the contact of the infected.

But this is a mistake. The disease, which is an epidemic, is not derived by contagion from the sick, but from a vitiated condition of the atmosphere. And this vitiation *proceeding* from the earth, and being confined to the lower stratum of the air, does not reach the highest floors of the dwellings—at least, not in its greatest concentration and strength.

It is on the same principle that, in the large cities of the Atlantic States, those children whose nurseries, during the summer, are in the third stories, are most exempt from attacks of cholera. That complaint, like the autumnal epidemic of which I have been speaking, appears to depend, at least in part, on a deleterious exhalation, which rarely reaches to the upper stories of houses.

Much has been said on the subject of the kind of diet most suitable to the purposes of prevention, during the prevalence of an epidemic disease. Some have recommended the abstaining from all but vegetable aliment, eating even of that very sparingly, and the drinking of water alone—while others have inculcated the propriety of the plenteous use of animal food, accompanied with an increased amount of wine, or ardent spirits.

Each of these courses must prove injurious. *Ibis tutissimus in medio*, is the only maxim that can, in this instance, be with safety adopted as the rule of practice. To fortify themselves against the impressions of epidemic poison, let those persons exposed to it, use that kind of diet, and pursue that general regimen, and course of life, which they have found by experience to be most conducive to their health and strength. Their systems will thus be enabled to make the most vigorous resistance of which they are capable, against the deleterious influence of the atmosphere.

That resistance will always be in proportion to the perfection and vigour of healthy action.

During the prevalence of an epidemic disease, any material change, of whatever description it may be, in diet, regimen, or habit, is attended with hazard. It unsettles the system, if it does not actually debilitate it, and renders it more susceptible of morbid impressions. It is like suddenly unsettling the condition of the constitution by a change of climate, which predisposes to disease—or, altering, in the very face of an enemy, the structure of a fortification, which, while the process is going forward, is necessarily weakened, and invites an assault.

I have no doubt that, by an intemperate use of wine and ardent spirits, individuals have escaped the autumnal epidemic. This course is called, in common language, “*living above the disease.*” But when the malady occurs in the midst of such irregularities, it rarely fails to prove malignant and fatal.

Finally, the better to escape an attack of epidemic fever, avoid, during its prevalence, all exciting causes. This is a rule of infinite moment.

Every one who has been for any time subject to the influence of the deleterious atmosphere, carries within him the seeds of the disease, and is predisposed to an attack of it. But without the action of an exciting cause, those seeds will never vegetate, and the attack, of course, will not take place.

The chief exciting causes are, all great and sudden vicissitudes of the weather, exposure to falls of rain, to the humidity and chills of the night, or to the fervours of the mid-day sun, intemperance in eating or drinking, the use of food difficult to be digested, and all excesses in exercise, whether corporeal or intellectual, or in the indulgence of the passions and emotions of the mind.

By a strict avoidance of these causes, thousands of individuals, with their systems strongly predisposed to the disease, pass in safety through the protracted dangers of an

autumnal epidemic. The action of an exciting cause is as essential to the production of the disease, as that of heat and moisture to the process of vegetation.

ART. VI. *Extracts from Magendie's Formulæ, for the Preparation and use of several new Medicines. Translated from the French.* By WILLIAM DARRACH, M. D.—(Continued from No. 9.)

I. EXTRACT OF OPIUM DEPRIVED OF THE MATTER
OF DEROSNES.

THE experiments which were made by me on the matter of M. Derosnes, having proved it hurtful when not united to an acid, and highly stimulating when thus combined—induced M. Robiquet to prepare an extract deprived entirely of this substance. To this end, he treated the ordinary watery extract with ether, and, by means of this reagent, separated completely this matter of Derosnes. The action of the preparation was tested by me on animals, and was found to be narcotic, differing from that of morphia only in strength. I have used it in practice with advantage.

Extract of Opium deprived of Morphia.

By the process described in the article morphia, the opium is not completely deprived of this alkali: a certain quantity is always to be found in the residue. Having been informed of this fact by M. Robiquet, I became desirous to ascertain if something useful could not be obtained from a substance considered inefficient, and deserving of no attention. Experiments lately made with it on animals, show it to possess a narcotic property, less powerful, it is true, than that of the ordinary watery extract, though sufficiently so to be used in practice. It may be administered in substance, four grains of which, do not appear to possess the power of one

grain of the aqueous preparation, nor of one fourth of a grain of morphia.*

II. RESIN OF THE NUX VOMICA.

In 1809, I submitted to the first class of the Institute of France, the experimental researches which conducted me to the knowledge of a singular property possessed by an entire CLASS of vegetable, (the bitter strychnine,) to excite powerfully the spinal marrow, without affecting directly the functions of the brain. At the close of the paper I mentioned the probably advantageous application of this substance to the treatment of diseases. The truth of this conjecture has since been confirmed, by the publication of Dr. Fouquier, and by a few trials made by myself, in cases of general and partial paralysis, and also in many other kinds of diseases of debility.

Preparation of Alcoholic Extract.

A certain quantity of nux vomica, after having been rasped, is submitted to the action of alcohol of 40°, and renewed until the raspings no longer yield any thing to the solvent. The solution is then slowly evaporated to the consistence of an extract. If alcohol of less strength be employed, the extract will possess less active qualities.

Dry Extract of Alcoholic Extract.

Precipitate by means of water, the extract made with alcohol of 36°, then filter and evaporate on plates, as in the process for making the extract of bark.

Physiological Properties.

A grain of this extract, absorbed from any part of the body, promptly produces death in dogs of the largest size.

* It should be obtained from those who prepare the morphia.

It excites tetanic paroxysms, which, by being protracted, arrest the action of the lungs. The animal, if touched when under the action of it, experiences a shock like that produced by an electric battery. The division of the spinal marrow at the occiput, or even decapitation, does not prevent the action of this substance—a circumstance which distinguishes the operation from that of all other stimulants with which we are acquainted. Examinations of bodies destroyed by this substance, display no alteration in the tissue, to discover to us the immediate cause of death.

Action of the Alcoholic Extract on a Healthy Man.

The action on a healthy man is the same as that above described. If the dose be sufficiently increased, death with the same symptoms is the consequence. The body exhibits no morbid condition of structure, except the traces of suffocation, which is the immediate cause of death.*

Action of the Alcoholic Extract in Disease.

The action of it is most apparent in cases of partial paralysis, on the part affected. The patient experiences here tetanic shocks, and pricking: the part is found covered with profuse perspiration, observable no where else. In cases of hemiplegia the effect is very remarkable. The healthy side remains quiescent, while the other is severely affected by the above noticed symptoms. In the case of a female, the diseased side was covered with a singular eruption. The tongue exhibits the same difference of condition in the two halves—one conveying a very pungent sensation of bitterness, while the other remains altogether insensible. If the dose of this article be increased, both sides of the body become affected, though unequally, with the tetanic shocks, which are, however, so violent sometimes throughout the system, as to throw the patient from his bed. A very

* I have been enabled to satisfy myself on this point, by an examination of a woman, who had been poisoned by the nux vomica.

small dose has no very obvious effect, until repeated several days.

Cases in which this Extract may be employed.

It may be employed in general and local diseases of debility, particularly in all kinds of paralysis. Mr. Edwards cured by it a case of amaurosis, complicated with paralysis of the superior palpebra. I have witnessed the excellent effects of it in impotency, incontinence of urine, &c. It has been employed by me also, in dyspepsia arising from a slowness in the digestive process, and in cases of extreme debility, accompanied with unconquerable tendency to sleep.

Mode of employing the Extract.

The preferable form is that of pills, if it be desirable to produce the tetanic symptoms, each pill should contain one grain of the extract, and be administered, one or two at the commencement, and the dose augmented daily, until the expected effect is obtained, when, to avoid injurious consequences, the medicine should be omitted. The evening is the best time for the administration of it—that the effects may be rendered more obvious. It is necessary, sometimes, to increase the dose from twenty-four to thirty grains daily—though generally from four to six grains are sufficient.

When the administration of it has, for some days, been interrupted, it must be resumed in small doses. If the slow effects of it are only desired, a grain or a half grain given daily, is a sufficient quantity. The tincture also, of which the following is the formula, may be used :

R Alcohol, at 36° $\overline{\text{Z}}$ i.

Dry extract of nux vomica, *gr.* iii.

This tincture may be used under the same circumstances as the extract in substance.

III. STRYCHNIN.

The alcoholic extract of nux vomica, the nux vomica in substance, the bean of Saint Ignatius, and the famous poison

of Java, owe their great activity on man and animals, to a peculiar alkaline matter contained in them all—recently discovered by Messrs. Pelletier and Caventou.*

Preparation of the Strychnin.

The alcoholic extract is taken and dissolved in water. To the solution is added the fluid sub-acetate of lead till a precipitate can be no longer formed.† The strychnin remains in solution with a quantity of acetate of lead. The lead is separated by sulphurated hydrogen, and the liquid, after filtration, is boiled with magnesia, to remove the acetic acid, and precipitate the strychnin. The deposit is washed in cold water, redissolved in alcohol to deprive it of the magnesia which may have been added in excess—and the solution being evaporated, affords the desired substance in a state of purity. If not found perfectly colourless, it should be again submitted to the action of acetic or hydrochloric acid, and newly precipitated by magnesia.

Strychnin obtained by slow crystallization from a diluted alcoholic solution, appears in the form of microscopic crystals—prisms of four sides terminated by four elliptical faces.

If the process of crystallization be rapid, the substance presents a white granular appearance. The taste of it is insupportably bitter, leaving at the back of the fauces the sensation experienced from certain metallic salts: it has no odour—exposure to air does not affect it. It is neither fusible nor volatile. The effect of heat is to decompose and carbonise it, which are effected at a lower temperature than that required to destroy other vegetable substances. When exposed directly to fire, it becomes inflated and black—and affords an empyreumatic oil, a small quantity of water and acetic acid, and of carbonic and carbonated hydrogen gases. Distilled with the deutoxide of copper, it furnishes much carbonic acid and some nitrogen. It is composed then, of oxygen, hydrogen and carbon.‡

* See *Annals de Chimie*, &c. Vol. II. p. 176, 1819.

† The foreign matters are also precipitated.

‡ Nitrogen seems not to enter into its composition.

Action of Strychnin on Man and Animals.

The action of this substance on man and animals, differs from that of the alcoholic extract of the nux vomica, in being more powerful. The eighth of a grain is sufficient to destroy a dog of the largest size. On man, one fourth of a grain produces very obvious effects.

Cases in which the Strychnin may be used.

They are the same indicated for the use of the resin of the nux vomica. This preparation is to be preferred, only, because the extracts of the nux vomica vary in their medicinal qualities somewhat according to the method of preparing them.

The strychnin is constant in its properties, and upon trial has proved uniform in its action—which make it a medicine always to be preferred.

Mode of employing the Strychnin.

It may be made into pills, to contain each one twelfth or one eighth of a grain of the strychnin, according to the following formulæ :

℞ Very pure strychnin, *gr.* ii.
Conserve of roses, 3ss.

To be well mixed and divided in twenty-four pills.*

Tincture of Strychnin.

℞ Alcohol, at 36°, ℥i.
Strychnin, *gr.* iii.

Dose from six to twenty-four drops.

* As it is of importance to have the pills, in property and quantity, unaffected by time, it is advisable to cover them with gold or silver.

(To be continued.)

ART. VII. *Account of some further Experiments to determine the absorbing power of the Veins and Lymphatics.* By I. O'B. LAWRENCE, M. D. and B. H. COATES, M. D.

WE had intended, ever since the experiments which were made last year, for the Academy of Medicine of this city, to take up the subject anew, and endeavour to prosecute it further. The committee, since that time, having been dissolved, we concluded to continue our inquiries in a private capacity. We have accordingly performed a number of experiments with that view.

We feel much pleasure in acknowledging the very liberal assistance which we have received from professor Chapman; who enjoys the singular praise of originating a lengthened course of inquiries, without any reference, whatever, to his previous opinions on the subject: it being his only object to discover and confirm the truth.

We have also been gratified with the company and occasional assistance of several gentlemen; among whom we may enumerate Dr. Seybert, Dr. Horner, professor Keating, Dr. S. Jackson, Is. Lukens, C. Biddle, H. Seybert and W. Dick, jr. a young man who has since been removed, in the flower of his age, by death. As this young man did not live long enough to see the completion of any of his scientific undertakings, his name will not be very widely known; but as he made himself useful to us by long and persevering attention, we deem it not improper, in our short-lived paper, to mention his affectionate disposition, and his promising talents.

As we considered it of the highest importance to have several witnesses of whatever was done, we invited various gentlemen, chiefly connected with the medical profession, besides those above named: and no experiment of importance was performed in the presence of fewer than four or

five persons, and scarce any even of the repetitions, before fewer than three.

We commenced by making a few further trials with coloured substances, and still with the negative result of none of them entering the vessels. Two animals were made to eat articles of this kind; a bitch the prussian blue, and a kitten, a mixture of indigo and milk. These were under somewhat different circumstances from the experiments of last year, in which the coloured substances were thrown into portions of exposed intestine, and secured with ligatures. They may be considered by some as fairer trials, as the natural condition of the parts concerned was unaltered, until the animals were killed and examined. They were tried, in consequence of reading the experiments published by Dr Milnor, in his inaugural thesis. The first named animal consumed not less than nine ounces and a half of the prussian blue; nevertheless, a considerable number of different solids and fluids, including the ordinary routes by which absorption has been supposed to take place, were examined, without discovering it in them. Cochineal, red saunders, anatto, turmeric and prussian blue, were thrown into the abdominal cavity of cats and kittens; and with precisely the same result; absorption of the colours not having been detected in any route.

In one instance, decoction of cochineal, strongly coloured, was forced into the cellular substance, over the abdomen of a kitten; and with the same negative result.

Far the largest part of our experiments were made with the prussiate of potass, which has many advantages in inquiries of this kind, as being the article at once most easy of absorption and of exposure by chemical means, of all the different substances we have tried. We can present a list of thirty-four animals, in which this salt was introduced into the alimentary canal, with an account of most of the fluids in which it was chemically evinced to exist, and the intervals of time at which each examination took place. In the first twenty-one, the parts were left undisturbed, until the animal's death; in the rest ligatures were affixed, as described in the list.

Animals	Quantity.	Duct.Thor	Rt. side of heart.	Gen. circulation.	Urine.	Vena portæ.	Miscellaneous.
Kitten.	Near 4 grains.	49 m. no blue.			45 m. no blue.		
Idem.	Near 12 grains.				97 m. no blue.		
Idem.	7 grains at twice, 5 hours apart.			9 m. jugular, 10 m. carotid, no blue.	Bladder blue.		
Dog.	Considerable quantity, probably greater part of a drachm at intervals.	4½ hours slight blue.		Fem. art. 4½ h. no blue.	4½ h. deep blue.	4½ h. slight blue Blue than D. thor.	Liquor pericardii perceptible blue.
Idem.	Idem. Idem.	5 h. 28 m. no blue.			5 h. 39 m. dis-tinct blue.	5 h. 10 m. strong blue,	
Rabbit.	Idem. Idem.	62 m. dis-tinct b.	68 m. strong blue.	Left side of heart 68 m. blue.	64 m. pelvis of kidney blue.	67 m. strong blue.	53 m. liquor pericardii faintly greenish Cellul.sub.valv. of heart, &c. blue.
Dog.	Nearly half a drachm of salt.	2 h. 4 m. blue.	2 h 7 m. blue.	Intercostal vein 1 h. 48 m. blue. Fem. art and vein 2 h. 22 m. blue.	1 h. 5 m. blue.		Valves of heart blue.
Idem.	Nearly a drachm of the salt.		2 h. 2 to 12 m. blue.	Fem. art 2 h 2 m. blue. Mesent. art. bluer.	2 h. 2 to 12 m. blue	2h. 2 to 12 m. no blue.	

Animals.	Quantity.	Duct. Thor.	Rt. sid. hrt.	Gen. Circulation.	Urine.	Vena portæ.	Miscellaneous.
Cat.*	2 drachms solution.	46½ m. blue.		Aorta blue 38½ m. vena cava. 46 m. blue.		34½ m. blue.	
Dog.	2 scruples salt.	40 m. no blue.	37 m. no blue.	Exter. iliac. art. 31 m. no blue.	47 m. blue.	28 m. no blue.	Liq. pericardii 34 m. no blue.
Idem.	Half a drachm of the salt.	50 m. no blue.		Jugular 26 m. no blue, Aorta 42 m. no blue.	55 m no blue. Pelvis kidney. none. Urine after several days blue.	35 m. suspicious.	
Kitten.	2 drachms solution.			Aorta 17 m. blue.	12 m. strong blue, bladder faint blue. Pelvis kidney 34 m. blue.	16 m. blue, equal to aorta.	Abdom. cavity no blue. Surface of stomach 31 m. blue.
Cat, starved ten days.	Idem.	24 m. blue.	14 m. blue.	Aorta 12 m. blue.	20 m faint blue. Pelvis kidney blue.	10 m blue, but less so than the aorta.	Cellular substance of thigh blue.
Cat.	Idem.	22 m. distinct blue, but not exceeding aorta.		Aorta 11 m. faint but distinct blue.	28 m. no distinct blue.		Liquor pericardii, 13 m. blue. Outside of stomach 19 m. no blue.

* The animals after this were starved.

Animals.	Quantity.	Duct. Thor.	Rt. side of Heart.	Gen. Circulation.	Urine.	Vena p. ria.	Miscellaneous.
Cat.	2 drachms solution.	17 & 23 m. no blue.	12 m. no blue.		20 m. no blue.		
Idem.	Idem.	12½ m. no blue.		Aorta 7 m. blue.	15 m. no blue.		
Kitten.	Idem.		10½ m. blue.	Aorta 6 m. blue.	20 m. blue.		
Idem.	Idem.	17 m. tinged blue	11 m. blue.	Idem 8 m. blue.		7 m. blue.	Outer surface of the stomach blue.
Idem.	Idem.	12½ m. faint blue.	8 m. not blue.	Idem 6 m. blue.			
Cat.	Idem.	14 m no blue.		Idem 8 m. no blue.	More than 14 m. no blue.	7 m. faint light blue.	
Idem.	Near 4 drachms.	16½ m. no blue.			6½ m. no blue.	9 m. blue.	
Kitten.	1½ drachm in rectum.	More than 57 m. no blue.		Jugular 57½ m. no blue. Carotid next, more than 57½ m. no blue.	strong blue. Pelvis kidney strong blue.	More than 57½ m. no blue.	

WITH LIGATURES AFFIXED TO THE ŒSOPHAGUS.

Animals.	Quantity.	Duct. Thor.	Rt. side of heart.	Gen. Circulation.	Urine.	Vena portæ.	Miscellaneous.
Kitten.	2 drachms solution.	7½ m. no blue.		More than 26 m. no blue.	26 m. strong blue.	5 m. no blue.	Surface of stomach no blue.
Rabbit.	4 drachms solution.	Inner surface of the duct 34½ m. no blue.	22½ m. no blue.	Aorta 18½ m. no blue.	25½ m. no blue.	14½ m. no blue.	
Idem.	Idem.	30 m. light blue.		Vena cava ascendens, 24½ m. no blue.	28 m. strong blue. Papilla of kidney 38 m. blue.	21 m. no blue.	Cellular tissue 34 m. blue. Cap- sule of a joint 40½ m. blue.
Idem.	2 drachms solution.		More than 28½ m. blue.	Aorta 23½ m. blue.	28½ m. strong blue. Pelvis kidney more 28½ m. blue.	19½ m. blue.	Liquor pericardii 25½ m. no blue.
Young rabbit.	Idem.		24½ m. slight blue.		33 m. green.*	15 m. slightly blue.	

* This indicates the prussiate, together with some cause which partially deoxygenates the test.

WITH LIGATURES AFFIXED TO THE ŒSOPHAGUS.

Animals.	Quantity.	Duct. Thor.	Rt. sid. hrt.	Gen. Circulation.	Urine.	Vena portæ.	Miscellaneous.
Kitten (sick.)	Idem.	46 m. deep blue.			42½ m. very deep blue. Sub- stance of kidney more than 48 m. blue.		Liquor pericardii 44 m. light, but ob- vious blue. Cellul. sub. more than 48 m. blue
Kitten.	Idem.		12 m. blue.	Aorta 12 m. light blue.	12 m. no blue.		
Idem.	Idem.	40 m. light blue.		Aorta 23 m. blue.	33 m. blue.	22 m. blue.	
Idem.	1½ drachms solut.	17 m. very faint blue.		Aorta 13 m. pretty strong- ly blue.	20 m. blue.	11 m. strongly blue.	
Idem.	Idem.	15½ m. light blue.	More than 18 m. blue.	Aorta 9½ m. blue, weakest.	18 m. faint blue.	8½ m. blue, strongest.	
Idem.	2 drachms.	20 m. blue,	16½ m. faint- blue.	Aorta 13 m. pretty strongly blue.	23 m. faintly blue.	11 m. pretty strongly blue.	Liquor pericardii 15 m. uncertain.

The imperfections in the above table arise, in part, from the circumstance of our not being able to procure a sufficient quantity of the fluids in question to exhibit the effect of the test, or from not being able to procure them pure, and unmixed with red globules of blood, or other matters which render the results obscure and uncertain. Very frequently, however, owing to the interrupted manner in which we were obliged to perform these delicate operations, and from the circumstance of being compelled to attend to them at distant and inconvenient hours, in the midst of professional engagements, haste has produced the loss of observations which were really made. Partial as some of the statements are, in consequence of this, it was thought that a fair view of the evidence could not be obtained without giving all that could in any degree affect it; and we resolved to insert all those instances in which as many results were known as the reader may see in the more deficient ones of the table.

The experiments which are placed last in the order of enumeration were the first performed. As we feared that vomiting might occasionally ensue from the introduction of so unnatural a stimulus into the stomach, we deemed it necessary to secure the œsophagus by a ligature; when afterwards, in making comparative trials without a ligature, we found that this more simple and natural process might easily be adopted in the numerous repetitions which were made. The article was now injected through a tube, introduced into the stomach by the mouth. The great apparent irregularity of the results will sufficiently explain why so many repetitions were deemed necessary.

The general weight of evidence in these cases is strongly in favour of the principal absorption having taken place through the vena portarum. Only one case is mentioned in which the colour in the fluid from the thoracic duct was not less intense than in the serum of the vena portarum.

In this instance, the former was not taken until thirty minutes, and the latter in twenty-one; during the interval of which there is every possibility for much of the absorbed sub-

stance to reach the points at which both were examined; as much greater diversity than this exists in many of the results. Hence it may be supposed that absorption would have taken place in the porta, to a greater extent, had both been examined at the same time. Another circumstance which affects the inference to be drawn in a very material degree, is, that the vena portæ conveys so much larger an amount of fluid than the thoracic duct, that an equal intensity of colour implies the presence of a much larger quantity of the chemical agent. This is also a reply to a suggestion made in the report to the Academy of Medicine in favour of the thoracic duct as a route. But as this was based, as far as relates to the mucous membranes of which we are treating, upon only seven experiments, and in none had we then proceeded to examine the serum of the vena portarum, it is hardly necessary to array them in opposition.

Inferences, however, of a more decisive kind may be drawn from some of the experiments which ensue. Five are first enumerated, in which the vena portarum was secured by a ligature. In the two first, the cardia being undisturbed and the fluid introduced down the œsophagus, the œsophageal and pharyngeal veins had access to it, and their radicles or capillaries may have absorbed the salt. A degree of uncertainty also prevails whether the vena portarum was in all these instances properly secured. In the three last, however, this point was carefully ascertained by subsequent dissection, and a ligature was also passed round the cardia to prevent the regurgitation of the fluid into the œsophagus itself. The prussiate was then introduced through a wound in the upper end of the duodenum, and this part also tied. In the first case, the prussiate was detected in the heart in thirty-four minutes, in the second in thirty-nine, and in the third in thirty-five minutes. This we consider as proving directly and decidedly that there are other means of absorption besides the veins. We now proceeded to tie the thoracic duct, and endeavour to ascertain whether the prussiate could be made to enter the circulation, by passages inde-

pendent of this. The three first experiments recorded are not quite definite from the cardia not being secured, as the fluid was liable to regurgitate into the lower part of the œsophagus; a circumstance which we always found to take place when that part was not artificially closed. It may also be remarked by the way, that the œsophagus was always found, when examined for that purpose after feeding, to contain a portion of the substances swallowed, whenever these retained the fluid or semifluid form.

As, however, the agent was conveyed into the systems of these animals, it certainly follows from the two first cases, that another route than the thoracic duct admitted of the passage of the salt. In the last of the three experiments both this vessel and the trunk of the lymphatics in the right side of the neck were secured: thus stopping every known outlet to the system of lacteals and lymphatics. The blue was nevertheless easily produced in the serum of blood taken from the right side of the heart, in twenty minutes.

In tying the lymphatic outlets great care and much time were employed. The sufficiency, however, of the ligatures was proved by extreme turgescence of the trunks and all the visible branches immediately after the application of the ligatures, generally followed by much enlargement, and frequently by their rupture in different places.

In the next animal, after securing these parts, the cardia was also tied, thus confining the visible means of absorption to branches of the vena portarum alone. Injection of the prussiate was made through an opening below the pylorus, and the wounded part tied. In thirty-two minutes, blood was taken from the right side of the heart, the serum of which gave a strong blue. We regard it, then, as evinced, first, by the two first of these experiments, that other means of absorption than the thoracic duct exist; secondly, by the third, that other routes exist than either that or the lymphatic trunk of the right side; thus confining them, of all visible vessels, to the sanguineous ones alone; and thirdly, by the last, that absorbed fluids are carried through the

trunk of the vena portarum individually, as access was barred to the branches of any other vein.

In the four next instances, after tying both the two lymphatic trunks and the vena portæ, injections of prussiate of potass were made down the œsophagus, without tying either the cardia or pylorus. In all these cases, the prussiate was conveyed into the circulation. In the first, it was discovered to be in the right side of the heart in thirty-six minutes, in the second, in forty-eight minutes, in the third it was found in the aorta in thirty minutes, and in the last it was exhibited more faintly in the shorter period of twenty-five minutes, in the right side of the heart.

In four cases which follow, all these vessels were first secured, and then the cardia. The upper part of the duodenum was lastly secured after injecting the agent through it. In none of these was a distinct blue to be found in either the serum of the right side of the heart or in the urine. In the second instance only, a *bluishness* is mentioned as having been visible in the serum of the right side of the heart. As, however, none of the others are so, as the term is so weak, and as the urine in the same case, although twenty-five minutes had elapsed, did not indicate it, it affords no very formidable exception. The intervals at which the examinations were made, for the heart, are 25, upwards of 23, 25 and 26 minutes; for the urine, 32, upwards of 23, 36½ and 28 minutes.

A comparative experiment was made by tying all the attachments of the stomach whatever, in order to ascertain the effect of simple infiltration. No prussiate was found in any of the fluids, although the stomach almost immediately after tying, gave an evident blue on applying the test to its outer surface, the animal being alive. The contents of the carotid were removed for examination in 31 minutes; of the right side of the heart, in 34; of the bladder, in 37; and then the pelvis and papilla of the kidney were examined.

We conceive we have thus established that articles taken into the stomach may escape by three outlets for absorption; namely, the vena portæ, the œsophageal veins and the

thoracic duct, and if all these are closed, the absorbed matters are no longer conveyed to the circulation or to the urine. With regard to the quantity conveyed by each, we have no sufficient means of judging. As the quantity of fluid, however, contained in the vena portarum, is so much greater than in the thoracic duct, it follows, that to produce a colour of equal intensity, a much larger amount of the colouring matter is requisite.

In examining the fluid of the thoracic duct, to detect prussiate of potass, if the colour was not immediately produced on applying the test, a portion of it was laid aside for several hours, generally till the next morning, and then tested again. The blood was, of necessity, treated in the same way. The urine being a substance exclusively recrementitious, and without vitality, this delay was not adopted with it, except where particularly mentioned. Great rigour was observed in making the minutes of the results; nothing being set down in an unqualified manner, or as being distinct, unless it was so exhibited to the satisfaction of all the persons present, as to leave no doubt upon the statement.

Where the time of the animal's death is not mentioned in the accompanying list of experiments, it is generally to be understood as occurring about the time that fluids were obtained from the vessels in the thorax, and as a consequence of having exposed that cavity; sometimes, however, as resulting from opening the large blood-vessels.

In consequence of reading the experiments described, in the medical journals which have reached us, as having been made by professor Mayer of Gottingen, upon absorption in the lungs, we have made a few with that reference. They have the disadvantage of being made upon small animals. We regret much the misfortune under which most American physicians labour, of the extreme difficulty and sometimes almost utter impossibility of access to publications of the European continent. We are from this cause, ignorant, further than the writer of medical intelligence for an English journal has informed us, of the extent of this gentleman's inquiries. Our principal results are included in the following table, in which the prussiate was thrown into the trachea.

Animals.	Quantity.	Rt. side Heart.	Lt. side Heart.	Thor. Duct.	Urine.	Miscellaneous.
Cat.	1½ drachms of solution.	Doubtful.	5 m greenish blue.	8 m. no blue.	More than 8 m. no blue.	More than 8 m left pleura blue, right not. Had lain on left side. Valves of heart blue. Ligaments and pericard. none.
Kitten.	Idem.	5½ m. blue, strongest.	5½ m. strong blue.		More than 9½ m doubtful. Bladder valves and chord tendin. blue. inside no blue. Lining memb of heart no blue.	9½ m. pleura blue. Afterwards
Idem.	1 drachm of solution.	4½ m. no blue	4½ m no blue.	7½ m. no blue.	More than 7½ m. no blue.	More than 7½ m. pleura pulmonary. Peritoneum no blue.
Kitten.	1½ drachms of solution.	More than 7½ m. doubtful.	More than 7½ m. no blue.	Upper part thor duct, contents and adjoining surface 7½ m blue		
Cat.	1 drachm of solution	7 m. weakly blue	7½ m strongly blue	16½ m no evident blue	More than 18½ m. no blue.	Cava descend. serum 18½ m. no blue
Cat.	Idem	4½ m. no blue.	3½ m blue.	14½ m. no blue.	31½ m. no blue.	
Kitten.	Idem.					Lay on left side. Right lung 4½ m left lung 6 m. neither blue—in 2 or 3 m more both blue. Uncertain if now alive.
Id. comparative.	1½ drachms of solution.					Tried 6 m after death In 21 m. the liquor pericardii blue.

The animals generally died in about a minute from the injection, from suffocation, by the ligatures which we placed on the tracheas of most of them. These experiments, we think, go to favour the idea that absorption from the mucous membrane of the lungs, is performed principally by the pulmonary veins; but we do not feel prepared to give a positive opinion from such limited inquiries. We would however, lay particular stress upon experiments 5th, and 6th, of the preceding table; (Nos. 65 and 66 of the list). In the first, the blood from the left side of the heart indicated the agent in much larger proportion than that from the right side, both being examined about the same time; viz. 7 minutes. In the second, where the examination was made in a much shorter period, viz. $3\frac{1}{2}$ and $4\frac{1}{2}$ minutes, the article was distinctly found in the left side of the heart before it had arrived in any other part of the system.

The effect of infiltration is also remarkable. The last is also probably a case of it.

The results of five trials of the prussiate in the cavity of the abdomen are here arranged for inspection.

Animals.	Quantity.	Thor. Duct.	Carotid and Jugular.	Urine.	Miscellaneous
Kitten.	$\frac{1}{2}$ oz. of solution.	12 & 13 m. distinct blue.	6 m. distinct blue.	19 m. no blue	
Idem.	Idem.	4 m. blue.	2 m. no blue	10 or 15 m. no blue. 29 m. distinct blue.	
Idem.	Idem, nearly.	$3\frac{3}{4}$ m. blue.	2 m. no blue.	5 m. blue, not strongly	
Idem.	$\frac{1}{2}$ oz.	3 m. blue.	4 m. strongly blue.	More than 4 m. doubtful	
Cat.	Uncertain.	$9\frac{1}{2}$ m. blue.	6 m. no blue.	More than $9\frac{1}{2}$ m. no blue.	

The short time in which the prussiate reached the upper part of the thoracic duct in the above cases, induced us to make four other trials in order to ascertain the earliest period at which that took place. Half an ounce of solution was employed in each case.

In the first animal, a kitten, the salt first arrived at the spot of observation in 4 minutes, and the quantity gradually increased till 7 or 8 minutes. In the second kitten, it appeared in 2 minutes. The serum of this animal gave a blue. In the third kitten, in $3\frac{1}{2}$ minutes. Serum of blood also blue. In the cat, it first appeared in 13 minutes.

In these cases, the thoracic duct was cut off near its insertion; and the test applied there. In consequence of this interruption, previously to the prussiate arriving at the upper extremity of the duct, the discovery of the salt in the serum of the blood clearly evinces that it was conveyed there by other channels.

The next experiment with the prussiate, we postpone till we speak of those made with *nux vomica*.

It has long been supposed by many physiologists that the process of absorption continues after animal death; and this has been assigned by some as a reason for the small quantity of blood found in the arteries of human subjects. We do not, however, know of any published proof that this process so continues in the lymphatics. It is mentioned by Magendie that he has seen, on pressing the lacteal branches so as to discharge their contents in the direction of the trunks, that those branches would again fill themselves after the animal's death. We have witnessed these appearances ourselves; but we do not know of any similar observations made on the lymphatics, or of any evidence of the actual chemical presence of an article conveyed after death into either of these systems from without.

Four kittens were bled to what is commonly considered death. The blood ceased to flow from the divided carotid, and voluntary motion was extinct. Prussiate of potass in solution was then thrown into the abdomen. It appeared at the thoracic duct in $5\frac{1}{2}$, 5, 14 and 12 minutes respectively. In the two last, the great vessels originating at the heart were secured by a common ligature. The blue colour was in every instance perfectly distinct.

With a strong solution of the green sulphate of iron, we made the following trials, testing it with the prussiate of potass.

WITH GREEN SULPHATE OF IRON.

Animals.	Place of inj.	Quantity.	Thor. Duct.	Gen. Circulation.	Urine.	Miscellaneous.
Kitten.	Small intestines.	Half ounce solution.	52 m. no indication.	Carotid 37 m. no blue.		Sulphate entered the stomach.
Cat.	Œsoph. and stomach.	3 drachms solution.	6 hours 46 m. no blue.		6 h. 50 m. no blue.	External surface of the stomach 6 h. 53 m. no blue. Stomach and rectum contained the salt.
Kitten.	Abdomen.	6 drachms solution.	29 m deep blue.	Carotid more than 18 m. doubtful, but probable.	31 m strong blue.	
Idem.	Idem.	Idem.	27 m. strong blue.		More than 27 m. no indic.	
Idem.	Idem.	1 oz. and 1 drachm.	23 m. strong blue.	More than 23 m. no indication.	More than 23 m. no indic.	
Idem.	Cellular tissue.	1 ounce.	31 m. no indic.	Carotid more than 40 m. no indication	48 m. no indication.	
Idem.	Idem.	6 drachms	More than 10 m. strong bl.	More than 10 m. no blue.	More than 10 m. no blue.	

In reasoning upon the subject of absorption, the question has frequently arisen whether the articles found in the living fluids exist there as chemical substances, or have their chemical nature altered and animalized by the action of the vessels through which they have entered the system. In other words, it has been inquired whether the chemical results we obtained were produced without previously causing the death of the fluid, and thus again reducing it to the influence of chemical laws, from which its vitality had previously entirely protected it. The instantaneous changes which take place in the recent chyle on applying the test, seem to forbid the idea of two successive alterations being produced, and one of them commonly so gradual in its progress as the extinction of life. It was, however, deemed a curious subject of inquiry, whether artificial chemical changes can take place in the fluids while they continue to circulate in living vessels, and the ordinary actions of life go on. We can hardly consider fluids as having undergone a change from life to death, while they continue to permeate the living organs, including the brain, and all the functions continue with no greater disturbance than naturally ensues from doing so great violence to the system as is necessary to the experiment. We commenced by throwing prussiate of potass into the abdomen, and green sulphate of iron into the cellular tissue, in order to try whether the well known result of their admixture, the prussian blue, would be produced in the vessels. This, however, did not take place; and we resolved to repeat it, by throwing the sulphate, as the article of more difficult absorption, into the abdomen, where this process went on with more facility, and the prussiate into the cellular substance. On performing this, we were gratified by the striking result of a distinct and beautiful blue in the thoracic trunk, and its contents, and in nearly the whole substance and surface of the *lungs*. These viscera were preserved in spirits, and are now in our possession. The blood threw up a coagulum of a strong blue colour, and the lymph and chyle from the thoracic duct, threw down a blue deposit. Thus not only a foreign, but a pulverulent substance could present its unnatural stimulus

and circulate through the vessels, and could accumulate in the lungs, without preventing the actions of life from considerable exertion, and without occasioning coagulation of the blood. The animal manifested some difficulty of respiration before she was killed, but walked about without the least difficulty, and uttered no cries, nor other signs of disturbance of its powers. In another case, the urine and lungs are noted in our journal as exhibiting a blue. The other parts similar to those above enumerated are not described as being found coloured. In a third, the fluid in the thoracic duct was blue, but not the other fluids examined, nor the lungs. Two unsuccessful trials were also made. In another case the thoracic duct was tied, and the same process repeated. A decided bluish green was here found in the urine; but neither the serum of the arterial blood nor the lymph of the ductus thoracicus manifested the blue or green. Several inferences may be drawn from this experiment, with which we shall not now trouble the reader.

We repeated the celebrated experiment of Magendie, in which he separated a limb from the body, except by the double attachment of either an artery and a vein, or of their two columns of blood circulating through quills. We employed nux vomica, and succeeded entirely in one case without the quills, and in two, in which they were used. In six other cases, two of which were with prussic acid, we failed. In conducting this distressing operation, we have not escaped the mortification of disappointment; it has however, been gratifying to us as far as we went to verify the results of this enterprising physiologist. They depend, however, on *symptoms* for their evidence, chemical proof of the presence of nux vomica not being capable of exhibition. In one experiment, (No. 78,) while waiting the result of an introduction of nux vomica, made ten minutes previously, two drachms of the solution of prussiate of potass which we employed, were forced into the cellular substance of the separated limb, from a pointed syringe. This salt was afterwards detected in the body, after having passed through one quill with the column of venous blood; thus rendering visible its actual transition, and confirming the results of Magendie.

LIST OF EXPERIMENTS.

I. CONTINUATION OF THOSE WITH COLOURED SUBSTANCES.

A. In the alimentary canal.

1. A bitch of rather a large size, was fed on meat containing prussian blue. Of this latter, she ate nine ounces and a half during twenty-two days; two ounces and a half of which were consumed during the last twenty-four hours.

Serum from the jugular vein and from the heart, two parcels of chyle and lymph from the thoracic duct, the lacteal vessels themselves, the mesentery, the outer surface of the intestines and stomach, sections of the os femoris, through the centre and both ends, the cellular substance, the brain and upper part of the medulla spinalis, the inside of the bladder, the pleura and the heart, underwent the fullest and most satisfactory examination, and were totally free from any unusual colour. The contents of the intestinal canal were very deeply coloured, throughout its whole length, with the blue.

On the next day, the fluid of the thoracic duct and the serum of the blood, were tested with sulphate of copper, and sulphate of iron, but without detecting the presence of the prussic acid.

2. A kitten, during three hours and forty-one minutes, ate as much as she could be made to eat, of a strongly coloured mixture of indigo and milk.

On killing the animal, neither the serum of the blood, nor the urine, was coloured with the indigo; though the inside of the whole alimentary canal was found most strongly so.

B. In the abdominal cavity.

3. A decoction of ʒj. of cochineal in ʒij. of water was thrown into the abdomen of a half-grown kitten. In eight minutes she vomited. This continued one or two minutes.

In fifty-two minutes, the animal having been pithed, the heart still beating, the thoracic duct was found visibly reddish. In fifty-nine minutes, infiltration to a considerable extent, was visible on the cellular substance beneath the peritoneum. The chyle did not give a black with red sulphate

of iron; but it requires a considerable proportion of cochineal to produce that effect. Serum of the blood did afford a blackness with the red sulphate.

4. An ounce and a half of saturated tincture of red saunders in diluted alcohol, was thrown into the abdomen of a cat. Almost immediately on removing the pipe, the operation having taken up several minutes, the breath smelled strongly of alcohol. The animal soon became quite insensible. The chyle was found of its natural appearance.

5. Five drachms of a strongly coloured solution of arnatto were injected into the abdomen of a kitten. In one hour and two minutes, the animal was killed and blood obtained from the carotid artery. In one hour sixteen minutes, the bladder was removed. No unusual colour was detected in any of the fluids.

6. Five drachms of a strongly coloured infusion of turmeric were thrown into the abdomen of a kitten. In 17 minutes the blood of the jugular vein; in 18, that of the carotid; in $20\frac{1}{2}$ the thoracic duct, and in 21, its fluid contents were exhibited to view. Neither the recent fluids, the duct, nor the serum obtained from the blood by retaining it till the next day, gave any appearance of the colour.

7. About a quarter of an ounce of a deeply coloured mixture of prussian blue and water was thrown into the abdomen of a kitten. In two hours and a half, the kitten was killed. The cellular substance covering the abdomen was thought to have a bluish colour. The urine presented a natural appearance; but, on adding sulphate of iron, it became blue. The mucous surface of the bladder presented similar appearances. The serum of the blood, from the neck, was not blue either with or without the addition of sulphate of iron. The papilla of the kidney was similar to the bladder in its appearances. A section of the liver afforded no indications, nor did the outer surface of the intestines. It was found that the prussiate of iron here used, contained some alkaline prussiate mixed with it.

8. Four ounces of a deeply coloured mixture of prussiate of iron were thrown into the abdomen of a kitten.

In two hours and fifty minutes, the animal was killed.

The colour of the urine was natural, but it gave a blue on adding persulphate of iron, (the prussiate as before being impure.)

C. In the cellular tissue.

9. About an ounce of a decoction of cochineal, in the proportion of two drachms to four ounces of water, was injected into the cellular substance over the abdomen of a kitten. In an hour and eleven minutes, the animal having been previously pithed, the thoracic duct was tied. The fluid contents were perfectly white. Serum of the blood from the aorta afforded no peculiar appearance, until on adding caustic potass, when it became visibly purplish.

II. WITH PRUSSIATE OF POTASS.

A. In the alimentary canal.

α. Without disturbing the natural condition of the parts.

10. Two kittens were fed on milk containing fifteen grains of prussiate of potass, of which the present one took about one fourth.

In forty-nine minutes the thoracic duct was opened and fluid obtained, which afforded no blue with the test.

In forty-five minutes the urine—no blue.

The salt was found in the alimentary tube, as far as the middle of the great intestine.

11. The remaining kitten had swallowed the rest of the mixture. In seventy-nine minutes the urine afforded no blue. Of the other fluids we have no memorandum.

12. Another kitten swallowed about seven grains of the salt in some milk. Part of this was eaten about noon, and the remainder about five hours afterwards. The fæces and urine gave a blue with the test.

In nine minutes after she had done eating, blood was obtained from the jugular vein, and in ten minutes from the carotid artery, the serum of neither of which gave a blue with the test.

The bladder, on its internal coat, gave, as might be expected, a strong blue. Its external surface was then exa-

mined, with a view to discover infiltration of the prussiate, if any existed, but without exhibiting it.

13. A large dog had taken a considerable quantity of prussiate of potass dissolved in milk, at three periods of two hours apart. He was then made the subject of a trial of exp. 102. in this list, and finally bled to death, at four hours and a half after the last feeding. The fluids of the thoracic duct gave a slight blue. Serum of blood from the vena portæ a blue, stronger than the last. Serum from the femoral artery, no blue. Urine a deep blue. Liquor pericardii, perceptible.

14. A small bitch swallowed a considerable quantity of prussiate of potass at two feedings, with an interval of two hours.

In five hours and ten minutes, blood was obtained from the vena portæ. The serum gave, next day, a strong blue. At five hours twenty-eight minutes, a ligature was placed upon the thoracic duct, and the fluid removed four minutes after, gave no evident blue. In five hours and thirty-nine minutes the urine gave a distinct blue.

15. A rabbit had swallowed a quantity of the prussiate in milk, at three times, with intervals of three hours, and near three hours and a half. At about fifty-three minutes the liquor pericardii became faintly greenish with the test, in our judgment, but rather doubtful. Fluid of the thoracic duct at 1 hour 2 minutes, gave a distinct blue. Pelvis of kidney at 1 hour 4 minutes, afforded blue. Serum from blood of vena portarum obtained at 1 hour 7 minutes—strong blue. Serum of blood from the right side of the heart in 1 hour 8 minutes—strong blue. Same fluid from the left side of the heart—blue. Valves—distinctly so in their substance. The cellular substance of several parts of the body was examined, and gave a distinct blue. The ligaments of the knee joint, capsular and lateral, gave a blue. The animal had been used, in the interval between feeding and opening, for experiment 105.

16. A middle-sized dog drank some milk containing about half a drachm of prussiate of potass, at one time. He was then employed for experiment 104.

In 1 hour 48 minutes blood was taken from an intercos-

tal vein near the sternum; the serum of which gave a blue.

In 1 hour 54 minutes the urine afforded a blue, but not strongly. It was not visible till more than usual of the sulphate of iron was added.

In 2 hours 4 minutes the fluid of the thoracic duct gave a blue.

In 2 hours 7 minutes blood from the cava ascendens and right side of the heart, mixed, was procured. The serum afterwards gave a blue. The valves of the heart gave a blue.

In 2 hours 22 minutes blood from the femoral artery and vein. Both afforded a blue in the serum.

In 2 hours 37 minutes from the vena portarum. Of this enough was not obtained, owing to the death and exhaustion of the animal.

17. A small dog swallowed near a drachm of prussiate of potass, in milk. He then underwent exp. 100.

In 2 hours 2 minutes blood was taken from the femoral artery, the serum of which gave a blue with the test. Serum of the mesenteric artery gave a stronger blue. That from the right side of the heart—a blue. That from the vena portarum—none. The urine—a blue.

All these were removed within ten minutes from the first.

In the subsequent experiments, the animals were starved for a day or two previously to commencing the operations, unless otherwise expressed in the descriptions.

18. A cat had 2 drachms of the solution injected down her throat.

Serum of blood taken from the vena portarum in $34\frac{1}{2}$ minutes gave a blue.

That of the aorta, taken in $38\frac{1}{2}$ minutes—a blue. The fluid of the thoracic duct in $46\frac{1}{2}$ minutes—blue. Serum from the vena cava, afterwards—a blue.

19. A small but full grown dog was made to drink some milk containing two scruples of the prussiate. In 28 minutes blood was obtained from the vena portarum; in 31 minutes from the external iliac artery; in 34 minutes

liquor pericardii; in 37 minutes blood from the right side of the heart; and in 40 minutes fluid from the thoracic duct: none of which, on the usual treatment, afforded a blue. The last mentioned fluid was *reddish* at its upper end for about half an inch, and above a bifurcation found there. The urine in 47 minutes gave a blue.

20. A small dog was fed on milk containing half a drachm of the prussiate. This animal had eaten within five or six hours previously. The fluid of the thoracic duct and the serum of each of the parcels of blood obtained were white and chylous. He was not employed for any other experiment. In 26 minutes, blood from the jugular vein was obtained; in 42 minutes, from the aorta; in 50 minutes, the fluid of the ductus thoracicus; the urine at 55 minutes; and subsequently the pelvis of a kidney examined. None of these gave any blue, when examined in the usual manner. The serum of blood taken from the vena portarum in 35 minutes was considered suspicious. Urine, after being kept for several days, produced a blue.

21. Two drachms of the above mentioned prussian solution were injected down the throat of a half grown kitten. A stomach tube was used in these cases.

In 16 minutes blood of the vena portarum was obtained, and in 17 of the aorta. The serum of each of these gave a blue, nearly equal in intensity. The indications afforded by the fluids from the vena cava, the thoracic duct, and the right side of the heart are lost. It is most probable that a sufficient quantity of that of the thoracic duct was not obtained. The urine, in 12 minutes—a strong blue. The empty bladder, still moist—a faint blue. The cavity of the abdomen—no blue. The external surface of the stomach in 31 minutes—a blue. The pelvis of a kidney in 34 minutes—blue. The substance of the same viscus—no blue.

22. A cat had been starved ten days, in consequence of her having escaped and hid herself in a situation where she could not get food. Two drachms of the saturated solution were then injected down the animal's throat, and water

was afterwards thrown in to wash it more completely down.

The following results were found by the usual process :
In the contents of the

Vena portarum	in 10 min.—blue, but not so much as the aorta.
Aorta	12 min.—blue.
Right ventr. of the heart	14 min.—blue.
Urine	20 min.—faint blue.
Fluid of the thoracic duct	24 min.—blue.
Pelvis of a kidney—blue.	Cellular substance of the thigh—blue.

23. Two drachms of the solution were injected through a tube down the œsophagus of a cat.

Results.

In the serum from the aorta in 11 min.—faint but distinct
blue.

Liquor pericardii	13 min.—no blue.
Outside of the stomach	19 min.—no blue.
Fluid of the thoracic duct	22 min.—distinct blue, but not exceeding that of the aortal serum.
Urine	28 min.—no distinct blue.

24. Two drachms were injected down the œsophagus of a large cat.

The serum of the aortal blood, obtained in 9 minutes, was accidentally obscured, so as to prevent a judgment; as also that of the right side of the heart, obtained in $12\frac{1}{2}$ minutes. The fluid of the thoracic duct at 17 minutes, and again at 23 minutes, and the urine at 20 minutes, gave no blue, although fairly exposed and examined.

25. Two drachms of the solution were injected down the œsophagus of another cat.

Results.

Serum of the aorta	in 7 min.—blue.
Urine	15 min.—no blue.
Fluid of the thoracic duct	$12\frac{1}{2}$ min.—no blue.

26. Two drachms of the same were injected down the throat of a kitten.

Results.

Serum of the aorta	in 6 min.—blue.
Serum of the right side of the heart	10½ min.—blue.
Urine	20 min.—blue.

27. Two drachms of the same down the œsophagus of another kitten.

Results.

Serum of the vena portarum	7 min.—blue.
Aorta	8 min.—blue.
Right side of the heart	11 min.—blue.
Outer surface of the stomach	—blue.
Fluid of the thoracic duct	17 min.—tinged blue.

28. Two drachms of the same down the œsophagus of another kitten.

Results.

Serum of the aorta	6 min.—blue.
Serum of the right side of the heart	8 min.—not blue.
Fluid of the thoracic duct	12 min.—faint blue.

29. Two drachms of the same down the œsophagus of a cat.

Results.

Serum of the vena portarum	7 min.—faint light blue.
of the aorta	8 min.—no blue.
Fluid of the thoracic duct	14 min.—no blue.
Urine	—no blue.

30. Nearly four drachms of the solution were injected down the œsophagus of a cat.

Results.

Urine	6½ min.—not blue.
Serum of the vena portarum	9 min.—blue.
Fluid of the thoracic duct	16½ min.—not blue.

8. By securing it within the rectum by a ligature.

31. About a drachm and a half of the solution were injected into the rectum of a kitten. She suffered so much from securing the anus with a ligature, which was obliged to be passed through by two stitches, that she appeared to be dead when the operation was done. She, however, soon recovered, and exhibited great uneasiness.

Results.—Serum of the blood obtained from the jugular vein in $57\frac{1}{2}$ minutes exhibited no blue; nor did that from the carotid or the vena portarum, nor the fluid from the thoracic duct; all of which were extracted in a very short time after, and in the order here enumerated.

The urine afforded a strong blue, as also the pelvis of a kidney.

7. By cutting into and securing the œsophagus in the neck.

32. Two drachms of a saturated solution of prussiate of potass were injected into the œsophagus of a pretty well grown kitten, through an opening, and secured by tying the œsophagus. The wound, when this was done, was in all instances carefully secured from the effect of the prussiate.

In 5 minutes the current of blood in the vena portarum was arrested by a ligature, and blood was then extracted, the serum of which gave no blue with red sulphate of iron. In $7\frac{1}{2}$ minutes the thoracic duct was tied; its contents, when removed and examined at 24 minutes, gave no blue. About 12 minutes, or nearly so, she died, from opening the thorax.

The urine, at 26 minutes, gave a strong blue. The surface of the stomach, soon afterwards, gave no blue. Serum from the general circulation gave no blue.

33. Four drachms of a saturated solution of prussiate of potass were thrown into the stomach of a rabbit, through an opening in the œsophagus, and the opening tied.

Blood of the vena portarum, of which the serum was afterwards examined, was obtained in $14\frac{1}{2}$ minutes; that

from the aorta in $18\frac{1}{2}$ minutes; that from the right ventricle of the heart in $22\frac{1}{2}$ minutes; the urine in $25\frac{1}{2}$; and the inside of the thoracic duct exposed to a test in $34\frac{1}{2}$. In none of these situations did the test afford a blue colour.

34. A young rabbit was treated in the same way, and the same quantity of fluid was employed.

In 21 minutes the serum of the vena portarum was procured, and it could produce no blue. In $24\frac{1}{2}$ minutes the serum of the vena cava ascendens was likewise obtained, and the same result ensued. In 28 minutes the urine gave a strong blue. In 30 minutes the fluid of the ductus thoracicus gave an evident light blue. In 34 minutes the cellular tissue—a blue. In 38 minutes a section of the papilla of a kidney—the same result; and in $40\frac{1}{2}$ minutes the capsule of a joint.

35. Two drachms of the saturated solution were injected into the stomach of a rabbit, through an opening made in the œsophagus, and secured by tying the orifice. The animal was languid at the time of the experiment.

Results.

Serum of the blood of the

Vena portarum	in $19\frac{1}{2}$ min.—blue.
Aorta	$23\frac{1}{2}$ min.—blue.
Liquor pericardii	$25\frac{1}{2}$ min.—no blue.
Urine	$28\frac{1}{2}$ min.—strong blue.
Serum from the right side of the heart	—a blue.
Pelvis of the kidneys	—a blue.

36. Two drachms of the prussiate solution were injected into the stomach of a young rabbit, and a ligature made on the œsophagus.

Results.

Serum from the vena portarum	in 15 min.—slightly blue.
From the right side of the heart	$24\frac{1}{2}$ min.—slightly blue.
Urine	33 min.—green.

37. A half-grown kitten, without any other visible cause

than confinement and bad air, lost her health, and took no food for ten days. Two drachms of the prussiate solution were injected down her œsophagus from an opening, and the orifice tied.

Results.

Fluid of the thoracic duct 40 min.—deep blue.

Urine 42½ min.—very deep blue.

Liquor pericardii 44 min.—light, but obvious blue.

The thoracic duct —blue.

The cellular substance, in more than 48 minutes, became blue; the kidneys, also, gave a blue through their substance.

38. Two drachms of the solution were in like manner thrown into another kitten, and the orifice tied. In five minutes the animal died.

In twelve minutes, nearly, the following fluids were removed from the body; viz. urine, which gave no blue; blood from the right side of the heart, the serum of which gave a blue; and blood from the aorta—a slight blue.

39. Two drachms of the solution were injected and secured in the same way, in another kitten.

Results.

Serum from the vena portarum in 22 min.—blue.

Aorta 23 min.—blue.

Urine 33 min.—blue.

Fluid of the thoracic duct 40 min.—light blue.

40. Another kitten underwent the same circumstances, with a drachm and a half of the solution.

Results.

Serum from vena portarum in 11 min.—strongly blue.

Aorta 13 min.—same, but not so much.

Fluid of thoracic duct 17 min.—very faint blue.

Urine 20 min. blue.

41. Another kitten underwent the same circumstances.

Results.

Serum from vena portarum	8½ min.—blue, strongest.
Aorta	9½ min.—blue, weakest.
Fluid of the thoracic duct	15½ min.—light blue.
Urine	18 min.—faint blue.
Serum from the right side of the heart	blue.

42. Another kitten half grown, underwent the same with two drachms of prussian solution.

Results.

Serum from the	
Vena portarum in	11 min.—pretty strongly blue.
Aorta	13 min.—pretty strongly blue.
Liquor pericardii	15 min.—uncertain.
Serum right side of heart	16½ min.—faintly blue, but the colour confused from an accidental cause.
Fluid of the thoracic duct	20 min.—blue.
Urine	23 min.—faintly blue.

2. After tying the trunk of the vena portarum alone.

43. The vena portarum of a nearly grown kitten was tied, separating it from the capsule of Glisson. Two drachms of the prussiate solution were then injected down the œsophagus.

Results.

Urine, during life,	in 18 min.—not blue.
External coat of the stomach	21 min.—blue.
Serum of the carotid artery	27 min.—deep blue.
Of the right side of the heart	30 min.—deep blue.
Fluid of the thoracic duct	34 min.—strong blue.
Urine, a second time, and after 34 min.	—not blue.
Inner coat of the bladder afforded a degree of blue.	
Papilla of kidney	—not blue.

44. A small dog had been used in an attempt to perform

the experiment of Magendie upon the artery and vein of the thigh ; but owing to the smallness of the vessels, it failed ; the poison not being inserted. The vena portarum was carefully tied, and two drachms of the prussiate solution injected down the œsophagus.

In 27 minutes, blood of the carotid artery was procured, the serum of which gave no blue. This animal was so much weakened and disordered by the operation, that we felt no certainty in the results obtained ; although we deem it a proper attention to candour to insert it.

ε. Tying the vena portarum, the cardia, and duodenum.

45. A drachm and a half of the prussiate solution were injected into the stomach of a half grown kitten, through the duodenum. Previously to this, the cardia and the capsule of Glisson were secured by ligatures. After the injection, the duodenum was tied, just below the pylorus.

The solution, in these instances, was carefully prevented from contact with any part lower than the ligature.

Serum from the right side of the heart, obtained in 34 minutes gave a blue.

Urine, in 36 minutes—no blue.

46. The same parts of a large, vigorous cat were secured, and a drachm and a half of the solution introduced before closing the duodenum. This animal had accidentally eaten, just before commencing the operation.

Results.—Serum of the right side of the heart and of the aorta had both been obtained at about 39 minutes ; the first gave a blue, the second not.

The section of a kidney—no blue.

47. The same parts of a small but vigorous cat were tied, and a similar quantity of the prussiate of potass thrown into the stomach.

Results.—Serum of the right side of the heart, in 35 minutes—blue, decidedly, and stronger than the last.

Section of a kidney, in 44 minutes—no blue.

Next day, the semilunar valves of the aorta and pulmonary artery, the mitral and tricuspid valves, the lining mem-

brane of the left ventricle, and the inside and outside of the aorta, all gave a beautiful blue.

In this case, care was taken to cut only in the linea alba in opening the abdomen, which succeeded perfectly in preventing excessive hemorrhage.

ζ. After tying the known outlets of the lymphatic system, without disturbing the cardia or duodenum.

48. A female cat, of uncommon strength and activity, was procured. The thoracic duct was secured with ligatures. Several lymphatics being cut, the tying of them required considerable time. Nearly two drachms of the solution were then thrown into the stomach, by a tube passed down the œsophagus, a part being lost. Water was then, as in several other instances, injected after it, to wash it down more completely.

In 47 or 48 minutes, the animal having died in little more than half an hour, the section of a kidney afforded a distinct blue; the urine, having been lost, could not be examined.

49. The thoracic duct of a strong male cat was secured, after a very careful dissection. The jugular and subclavian veins of the right side, and their common trunk, were next carefully secured by ligatures, so as to intercept all communication between that lymphatic trunk which enters into them, and the circulating blood. Three drachms of the prussiate solution were then thrown down the œsophagus, which was uninjured.

In 35 minutes the urine was strongly blue with the test. In 49 minutes the fluid of the thoracic duct also gave a strong blue.

50. The thoracic duct and lymphatic trunk of the right side, in a cat, were secured. In this animal the vena cava was tied above the renal veins, for a particular reason. Three drachms of the prussiate solution were then injected down the animal's throat. The abdomen was sewed up. In 17 minutes the animal died.

Results.—Serum from the right side of the heart, in 20 minutes, gave a blue.

Urine	22 min.—no blue.
Kidney	32 min.—no blue.
Fluid of the thoracic duct	37 min.—no blue.
Same	42 min.—no blue.
Same	60 min.—no blue.

7. After tying both the lymphatic trunks, and the cardia and duodenum.

51. The cardia and the lymphatic trunks of a cat were secured by ligatures. Two drachms of the prussiate solution were thrown into the stomach, and the duodenum tied.

In 32 minutes the blood was taken from the right side of the heart, the serum of which gave a strong blue.

8. After tying both the lymphatic trunks and the vena portarum, leaving the cardia and duodenum undisturbed.

52. The lymphatic trunks and the vena portarum of a cat were secured by ligatures, and three drachms of the saturated solution injected down the œsophagus. In 31 minutes the animal died.

Serum from the right side of the heart, in 36 minutes, gave, in the usual way, a deep blue. Immediately afterwards that of the left side was obtained, which also gave a deep blue. The outside of the stomach then gave a blue. The urine, none. The fluid of the thoracic duct, a blue. The serum of the vena portarum, a blue.

53. The same vessels of another cat were tied, and two drachms of the solution injected down the œsophagus.

In forty-eight minutes, and subsequently to the death of the animal, blood was obtained from the right side of the heart, which gave a blue; that from the aorta—also a blue; and the urine, which gave none. The outside of the stomach gave a blue during life.

54. The same vessels were tied in another cat, of full size. Two drachms of the prussiate solution were then injected down the throat.

Results.

Serum from the aorta in 30 min.—blue.

From the right side of the heart 36 min.—blue.

Urine and sections of the kidneys—no blue.

55. The same vessels being tied in another cat, two drachms of the solution were introduced down the œsophagus. The serum of blood obtained from the right side of the heart in 25 minutes, gave a slight blue. That of the vena portarum and splenic vein, in this short interval of time, gave no visible blue; nor did the urine.

1. After securing both the vena portarum, the lymphatic trunks, and the cardia and duodenum.

56. These parts of a half grown cat having been secured, including the whole capsule of Glisson, two drachms of the solution were injected into the stomach and retained there by tightening the ligature on the duodenum. A drop or two of the fluid fell on the peritoneal coat of the stomach.

In 25 minutes the blood of the right side of the heart was obtained. It gave no blue. In 32 minutes the inner surface of the bladder was also examined, and it gave no blue.

In 29 minutes, and after the animal had been killed, by opening the thorax and the heart, the surface of the stomach, when moistened with the sulphate of iron, gave no blue. Forcible contractions succeeded, and in a minute and a half, the colour appeared.

57. The same parts were tied in another cat, and two drachms of the prussiate solution thrown into the stomach. The serum from the right side of the heart in upwards of 23 minutes, became *bluish* with the test. The urine underwent no change.

58. The same parts were tied in a cat not fully grown. A drachm and a half of the solution were then thrown into the stomach. The serum from the right side of the heart gave no blue. It was taken in 25 minutes. The urine gave no blue in 36½ minutes.

59. The same parts were tied in a strong cat, and a drachm and a half of the prussiate solution thrown into the stomach.

Serum from the right side of the heart in 26 minutes—no blue.

Urine 28 minutes—no blue. At 29 minutes, the animal having died in consequence of opening the thorax, the external surface of the stomach became blue in one quarter of a minute.

z. Comparative.—The stomach being cut off by ligature from all connexion with the system.

60. A kitten rather more than half grown was used for this experiment. Ligatures were placed upon the cardia, the capsule of Glisson, the duodenum three inches from the pylorus, and all other parts immediately connected with the stomach; so as to exclude this organ from all communication with the system. Two drachms of a saturated solution of the salt were injected into the stomach through the duodenum, and the wound closed by ligatures. Care was taken to prevent the contact of the fluid with other parts. The stomach soon became very dark coloured.

In 31 minutes, blood from the carotid, in 34 minutes, blood from the right side of the heart, and in 37 minutes, urine were obtained; but none of them indicated the presence of the article. Neither did the papilla of a kidney indicate it. But the test being applied to the exterior surface of the stomach, almost immediately after the injection, produced a beautiful blue.

B. *In the trachea and lungs.*

z. During life.

61. The urethra of a large female cat was secured. One drachm and a half of the solution of prussiate of potass were injected from the trachea into the lungs through an incision made below the larynx. In 5 minutes a ligature was placed upon the great vessels leading from the heart. In 8 minutes the thoracic duct was tied.—Its fluid was tested but indicated no blue. Sulphate of iron being dropped in the two sides of the chest, the pleura pulmonalis and costalis of the left side became strongly blue, but no such appearance was shown on the right side. The animal had

lain on the left side. The valves between the auricles and ventricles of the heart, became blue with the test. The ligaments, periosteum and urine, indicated none of the prussiate. The serum from the left side of the heart, became greenish blue. Right side appeared slightly bluish, but doubtful.

62. The same experiment was repeated upon a kitten. The same quantity of solution was used. In $5\frac{1}{2}$ minutes, a ligature was placed upon the great vessels of the heart, and the blood of its two sides separately obtained in $7\frac{1}{2}$ minutes. In $9\frac{1}{2}$ minutes, the exterior lining of the lungs and the pleura costalis gave a blue. The serum from each side of the heart, gave a strong blue, (the right side strongest;) as also did the mitral and tricuspid valves. The chordæ tendineæ of the left side, also gave a blue. The lining membrane of the inside of the heart gave no blue. The bladder gave no blue on its internal surface. The urine became blue; but it was doubtful whether the vessel was clean.

63. The experiment was repeated on a half grown kitten, with the variation of throwing one drachm of the solution through a small pipe, which both made a puncture through the trachea, and afforded a passage to the fluid.

In $4\frac{1}{2}$ minutes, the vessels were tied, and then blood was obtained separately from both sides of the heart. Neither indicated the salt. The thoracic fluid was obtained in $7\frac{1}{2}$ minutes but indicated no blue. The urine remained colourless with the test. The pleura pulmonalis became blue. The peritoneum covering the bladder and intestines gave no blue.

64. The trachea of a kitten being separated from its attachments, a drachm and a half of the prussian solution were thrown in. The trachea was then tied. In one minute from the injection, death ensued.

The upper part of the thoracic duct, its contents, and all the adjoining surfaces, in $7\frac{1}{2}$ minutes, blue with the test. The peritoneum—no colour. Serum of the right side of the heart doubtful. That of the left side—none.

65. A stout female cat was treated in the same manner, and one drachm of the solution introduced. She died in about one minute.

Results.

Serum from right side of heart in 7 min.—weakly blue.

Left side of heart 7½ min.—strongly blue.

Fluid of the thoracic duct, being chyle and lymph mixed,
16½ min.—no evident blue.

Serum from the cava descendens 18½ min.—no blue.

Urine —no blue.

66. Another cat was treated in the same manner, and with the same quantity of the solution.

Results.

Serum of the abdominal aorta in 3½ min.—blue.

Abdominal vena cava 4½ min.—no blue.

Fluid of the thoracic duct 14½ min.—no blue.

Urine 31½ min.—no blue.

67. A kitten underwent the injection of one drachm of the solution into her trachea. She was laid on the left side: those previously operated on having generally been laid on their backs.

The surface of the right lung gave no blue, in 4½ minutes; nor that of the left lung, in 6 minutes. In 2 or 3 minutes more both gave a blue. It was now uncertain whether the animal was still alive. The trachea had been left without a ligature, in order to prolong her life as far as possible.

β. Comparative. After death.

68. An animal, bled to death in exp. 2, six minutes afterwards was used for this one. A drachm and a half of the prussiate solution were thrown into the trachea.

In twenty-one minutes the pericardium and liquor pericardii became blue under the test. The appearances of the lungs have not been preserved.

C. *In the abdominal cavity during life.*

α. For comparing the different fluids.

69. Half an ounce of the saturated solution was injected

with a pointed syringe into the abdominal cavity of a half grown kitten, of uncommon strength and ferocity. At $5\frac{1}{2}$ minutes the blood-vessels of her neck were divided, and in 8 minutes she was dead.

Chylous fluid was obtained from the thoracic duct between 12 and 13 minutes; it gave a distinct blue.

The urine, in 19 minutes—no blue.

The serum of the carotid artery, mixed with that of the jugular veins, obtained in 6 minutes, gave a distinct blue.

70. Another very strong and ferocious kitten had half an ounce of the solution injected into the abdomen.

In 2 minutes the blood-vessels of the neck were cut, and blood obtained; the serum did not yield a blue.

In 4 minutes the thoracic duct was tied, and in 6 minutes the fluid extracted; this was chylous, and gave a blue.

In 10 or 15 minutes the urine gave no blue; in 29 minutes, a distinct one.

It should here be borne in mind that the solution lay in contact with the bladder during this period and after death.

71. A quantity nearly similar was injected into the abdomen of another kitten.

Results.—Blood from the vessels of the neck, in 2 minutes—no blue. Thoracic duct tied in $3\frac{3}{4}$ minutes, chylous fluid obtained, $6\frac{1}{2}$ minutes—blue. Urine removed in 5 minutes—blue, with the more delicate test. It was tried with the green sulphate, and afforded none.

72. Half an ounce was thrown into the abdominal cavity of a kitten. The thorax was immediately opened.

The thoracic duct was tied in 3 minutes, the fluid, which was chylous, being obtained in 7 minutes, gave a blue.

Serum from the vessels of the neck, in 4 minutes—strongly blue.

Urine, obtained afterwards—doubtful.

73. A quantity of the solution was thrown into the abdomen of a cat.

In 6 minutes some blood was taken, the serum of which gave no blue. In $9\frac{1}{2}$ minutes the fluid of the thoracic duct gave a blue. The urine gave none.

2. To ascertain the time required for substances to pass from a serous cavity through the thoracic duct.

74. Half an ounce of the solution was thrown into the abdomen of another kitten.

In two minutes the thoracic duct was exposed and divided, and sulphate of iron applied to the wound, while the spectators watched the appearances which took place. At first, and for a short time, no effect was produced; but in 4 minutes the chylous fluid which issued began to produce a blue on coming into contact with the test, and it continued to produce an increased intensity till 7 or 8 minutes, when, a very strong colour being exhibited, the experiment was discontinued. The *green* sulphate was the one here employed.

75. This process was repeated on another kitten, with the same quantity of the prussiate.

In a minute and a half an ambiguous appearance was visible; in two minutes and a half a distinct blue. The serum here gave a blue.

76. The same process was repeated upon another kitten, with the same quantity of the solution.

The vessels of the neck were then divided. In two minutes and a half no blue appeared; in three minutes and a half a strong blue was formed.

The serum of blood obtained afterwards gave a blue. Urine uncertain.

77. The same process was repeated with a cat, who happened to be pregnant.

In two minutes from the injection the thorax was opened, and as soon as it could be done, the test was applied to the orifice of the divided thoracic duct. At thirteen minutes the blue first appeared.

D. In the cellular substance.

78. In a large bitch, employed for exp. 100, the thigh had been separated entirely from the body, with the exception of a column of blood in the femoral artery, and another in the vein, both circulating through quills, having the

vessels completely divided. Ten minutes after the application of the poison, two drachms of the saturated solution of prussiate of potass were injected by a sharp pointed syringe into the cellular substance of the separated limb.

In 59 minutes blood was extracted from the trunk of the femoral vein above the quill, where it was continuous with the animal's body; the serum of this gave a distinct blue. Of this there is no doubt, notwithstanding we were unable to detect it in any of the following substances, which were removed from the body at the periods affixed to their names.

Blood from the femoral artery above the quill, 57 minutes; the bladder, both by an infusion, and by applying the test to its inner coat, 70 minutes; blood of the vena portarum, 75 minutes; blood of the right side of the heart, 80 minutes; fluid of the thoracic duct, 98 minutes.

E. To ascertain whether absorption continues after animal death.

79. A kitten was bled from the carotid artery, as long as blood would flow, and until the entire suspension of voluntary motion. Two drachms of the saturated solution of prussiate of potass were then introduced into the abdomen.

The thoracic duct being divided high in the thorax, and red sulphate of iron in solution placed in contact with it, the fluid effused continued colourless at first, but a strong blue appeared in five minutes and a half.

The serum of blood obtained afterwards gave no blue.

80. Another kitten was bled in the same manner, and to animal death. In two minutes afterwards the thoracic duct was divided near its upper extremity, and a colourless mixture of chyle and lymph issued. The test was then applied with no effect.

In three minutes two drachms and a half of the prussiate solution were thrown into the abdomen.

In five minutes from this time a blue first appeared at the orifice of division, and it became strong almost immediately.

The urine, when tested, gave a light green tinge, similar to that of exp. 93. The serum—no change.

81. Another kitten being bled to death, all the vessels attached to the heart were effectually closed by a ligature. This, and the injection of a quantity of the prussiate solution into the abdomen, were performed during two minutes. Three minutes afterwards the thoracic duct was divided, and the issuing fluids tested—no blue was produced.

In 14 minutes from the injection the blue colour began to form gradually; in 16 minutes, the whole extent of the duct, where covered with the liquid test, became blue; and at 39 minutes the colour was intense.

82. Precisely the same experiment was repeated on another kitten. A minute and a half after cutting the carotid and jugular, the vessels were tied at the heart, and in two minutes the injection was finished.

At three minutes from that period there was no blue at the wound in the duct. It appeared at twelve minutes.

III. WITH GREEN SULPHATE OF IRON.

A. *In the alimentary canal.*

83. Half an ounce of a strong solution of green sulphate of iron was injected into the small intestines of a large kitten; distributing it nearly equally upwards and downwards, from a wound near their middle. Some was supposed to pass upwards into the stomach. The wounded intestine was tied, and the abdomen stitched. The kitten vomited, but the matter ejected gave no blue with prussiate of potass. Vomiting again, a green was afforded. Prussic acid was applied, at 37 minutes, to the tongue and eye; but the article not appearing to be good, and not destroying life, the carotid artery was cut, and florid blood obtained. The serum gave no blue with prussiate of potass. Fluid of the thoracic duct, in 52 minutes, gave no indication of iron, either with tincture of galls or with prussiate of potass.

84. About three drachms of the solution were carefully injected into the œsophagus of a cat, being directed downwards. The œsophagus was then tied.

In 6 hours and 36 minutes afterwards, the animal was pithed.

Results.

Fluid of the thoracic duct in 6 hours 46 min.—no blue.

Urine 6 hours 50 min.—no blue.

External surface of the stomach 6 hours 53 min.—no blue.

The contents of the rectum in 6 hours 55 min.—gave blue in spots, and a bluishness generally In 57 min. the stomach a strong blue.

B. In the abdominal cavity.

85. A kitten had had camphor thrown into her rectum, which had affected her nervous system powerfully, but from which she had recovered. Two days afterwards, she had six drachms of the solution of sulphate of iron thrown into her abdomen. Almost immediately she had three stools. After violent struggles, she died, in eighteen minutes. The serum of the blood obtained from the carotid immediately after was not perfectly free from red globules, and when prussiate of potass was added, it gave a brownish tinge, such as we have often seen under similar circumstances. Fluid of the thoracic duct, in 29 minutes, gave a deep blue. Urine, in 31 minutes, a strong blue.

86. Six drachms of a strong solution of sulphate of iron were injected into this cavity in a kitten. In six minutes she vomited; in sixteen minutes was convulsed; and in twenty-five minutes died.

The chyle in twenty-seven minutes gave a strong blue. The urine gave no colour different from its natural one.

87. One ounce and one drachm of the same sulphate solution were injected into the cavity of the abdomen of a kitten. In two minutes the animal vomited. In twenty minutes she died. In twenty-three minutes, or three minutes after death, the chyle was removed, and gave a strong blue with prussiate of potass, and a strong black with tincture of galls.

The urine indicated none of the article. The same was observed of the serum of the blood.

C. In the cellular tissue.

88. One ounce of a strong solution of the green sulphate of iron was injected into the cellular tissue covering the abdomen of a healthy half-grown kitten. In forty minutes the animal was pithed. Blood from the carotid was obtained. In fifty-one minutes the thoracic fluid was obtained. In forty-eight minutes urine was procured. None of the fluids indicated the presence of the salt.

89. This experiment was repeated upon another kitten, and six drachms were injected. In four minutes the animal was much debilitated. In ten minutes it was pithed. The chyle gave a strong blue. The urine gave no blue, though a small drop of the ferruginous solution was sufficient to strike a visible blue. The serum, obtained after death, gave no blue.

IV. DOUBLE EXPERIMENTS WITH BOTH THESE SUBSTANCES,
TO EFFECT A CHEMICAL CHANGE IN THE LIVING VESSELS.

90. Six drachms of the saturated solution of prussiate of potass, were injected into the right side of the cavity of the abdomen of a large male cat. Six drachms of the strong solution of green sulphate of iron were injected into the cellular tissue over the opposite side of the abdomen. In 37 minutes from completing the last injection, blood was obtained from the jugular vein. In 40 minutes the animal was pithed. In 46 minutes, the thoracic duct, which was double, was tied.

No blue colour was observed in the fluids. But on adding sulphate of iron to the thoracic fluid and to the urine, they became blue.

The animal remained strong under the experiment.

91. This experiment was repeated on a large healthy cat, with this variation, that the prussiate was first thrown into the cellular tissue over one side of the abdomen, and the sulphate next injected into the cavity of the abdomen, on the

opposite side. In 35 minutes the animal was bled to death from the carotids and jugulars. The lungs felt perfectly healthy, but were of a strong blue colour throughout their whole structure, except two or three inconsiderable spots, where they were of their natural colour. These viscera forming a very singular preparation, were preserved, and are now in our possession. The thoracic duct in its course in the thorax, was of a strong blue before being touched. Its fluid on being received into a vessel was of a most obvious and conspicuous blue. The urine was also blue. The coagulating lymph thrown up by the blood was blue.

On the next day the chyle had thrown down a blue deposit. The liquor pericardii was clear, but became blue on adding sulphate of iron.

92. Four drachms of the saturated solution of prussiate of potass were injected into the cellular substance over the left side of the abdomen of a kitten, and four drachms of a strong solution of sulphate of iron into the cavity on the right side.

In 30 minutes the animal was much affected by the operation. In 35 minutes she was dead.

The liquor pericardii was clear, but became blue on the addition of sulphate of iron. The urine is marked as having exhibited a blue, and the lungs a blue. No memorandum has been preserved of the appearance of the thoracic duct and its contents.

93. Seven drachms of a strong solution of the bisulphate of iron were injected into the abdomen of a cat. Five minutes after, an equal quantity of the prussiate solution was forced into the cellular membrane at a distant point of the abdomen. In one hour seven minutes the fluid contents were arrested in the thoracic duct by a ligature, and immediately removed. They were already of a faint blue.

In this animal, the lungs were not of an unnatural colour. The blood obtained in one hour three minutes, gave no blue in the serum until the sulphate of iron was added to it. Neither did the urine, obtained soon after. Both these fluids indicated distinctly the presence of the alkaline prussiate

alone; by producing, with the sulphate of iron, the first, a strong blue, the latter a light green.

Besides these three last cases we met with the following failures:

94. A kitten, in which four drachms of the ferruginous solution were thrown into the peritoneal cavity, and as much of the prussian solution into the cellular substance.

95. A small Maltese dog, into which six drachms of each were introduced in the same manner, but beginning with the prussiate and adding the other within $3\frac{1}{2}$ minutes.

The following experiment is somewhat dissimilar.

96. In a large strong cat, the outlets of the lymphatic trunks of both sides were carefully secured by ligatures. Three drachms of the solution of the sulphate were thrown into the abdominal cavity, and within a minute and a half of this, three drachms of prussiate of potass into the cellular tissue on the other side.

Blood was obtained from the femoral artery in $44\frac{1}{2}$ minutes. The animal died in $54\frac{1}{2}$ minutes. The thoracic duct was full and distended in 62 minutes, with a white fluid. In 2 minutes more, a considerable quantity of this chylous matter was obtained. Each of these fluids was remarkably free from blue appearance. Nevertheless, in one hour ten minutes, the urine was of a strong bluish green.

All the above fluids indicated, on being tested, the alkaline prussiate.*

V. WITH POISONOUS SUBSTANCES.

The experiment of Magendie, in which a limb was separated from the body so far as only to be connected with it by either an artery and a vein, or simply by two columns of blood, circulating through quills, was repeated several times. As this experiment, however, is well known, we shall not insert the details.

Six trials were made on dogs, by introducing quills and

* We are happy to learn that our friend, Dr. I. K. Mitchell, of this city, has since made a trial, in which these two salts were injected into the thorax and the abdomen, with the result of a fine blue appearance in the lymphatics, running over the diaphragm; also another, in which, two portions of intestine being employed the precipitate was seen to take place at the union of lacteal trunks on the mesentery.

dividing the vessels; two (97, 98) with, and three (99, 100, 101) without success, in using nux vomica, and one (102) unsuccessful trial with prussic acid.

In one (103,) trial without quills, we succeeded in producing tetanus and death from nux vomica.

In three others, (104, 105, 106,) one on a dog, with nux vomica, one on a rabbit, with the same substance, and one on a dog, with prussic acid, we failed; and deeming the cases above enumerated sufficient, did not persevere in this painful experiment:

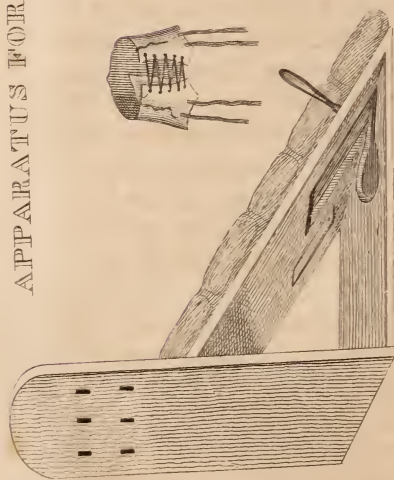
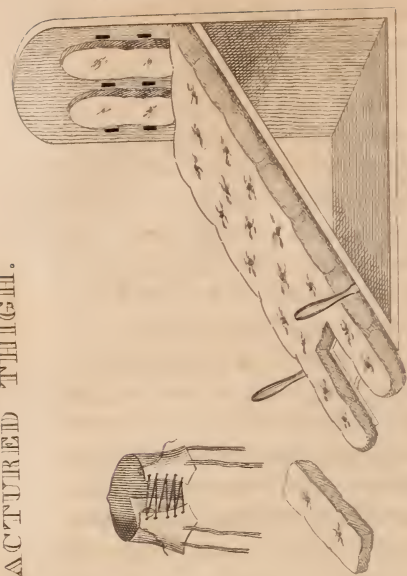
J. O'B. LAWRENCE,
B. H. COATES.

ART. VIII. *Additional Remarks on the Treatment of Fractures of the Thigh.* By WILLIAM GIBSON, M. D. Professor of Surgery in the University of Pennsylvania.

IN a former number of the Journal, I gave a detailed account of the apparatus employed by different surgeons, for fractures of the thigh, pointed out the defects attendant upon each, and proposed an improvement on that of *Hagedorn*. My object in the present communication is to describe a very simple piece of machinery, calculated, I conceive, to operate nearly upon the same principle, and to answer the same purpose, without incommoding the patient, except in the slightest degree. It is proper to premise, however, that I have had no opportunity of ascertaining its utility, on a subject actually labouring under fracture, but its mode of action and advantages, appear so self evident and demonstrable, that I feel no hesitation in making it known to the public. From this, at any rate, no great injury can result, even if the communication should turn out to be premature, for its defects or merits will soon be tested, and if found nugatory and ineffectual, it will only share the fate of many other inventions, and speedily be banished from practice; if, on the contrary, it is proved to be useful, the sooner the profession are acquainted with it the better, and the public can justly find no fault with its early promulgation.



APPARATUS FOR FRACTURED THIGH.



It occurred to me, some time since, that most of the indications pointed out in my former paper, as essential to the preservation of the length of the limb, in fractured thigh, might be fulfilled in the following manner: 1st, to elevate each extremity upon an inclined plane, extending from the ischium to the heel. 2dly, To secure each foot to a foot-board by gaiters, and 3dly, to permit the patient's body to rest unincumbered upon a mattress and pillows. With this view, I contrived the following machine—consisting of a board sixteen inches wide, two feet four inches high, and placed *vertically*, with six mortices near its upper extremity—of another board of similar breadth and length, placed *horizontally**—of a third, three feet in length, and extending from the extremity of the horizontal piece, to within ten inches of the top of the upright one, so as to form an *inclined plane*. The whole being joined together present the figure of an unequal triangle. At the lower extremity of the inclined piece, an opening is left six inches wide, and eight long, with a corresponding door, intended to convey a vessel beneath the patient to receive the *fæces* or urine. Opposite to this there is another and a larger opening of a circular form, in the horizontal board, to afford ample room for the pan to rest. There are likewise two mattresses, two foot cushions, and a pair of gaiters. The larger mattress is of the exact length and breadth of the inclined board, is two inches and a half thick, is fastened to its surface by straps secured on its edges, and is cut out at its lower part, opposite to the opening in the board. The smaller mattress forms a kind of cushion, and is exactly adapted to the open-

* Mr. Joseph Cloud, jr. a very intelligent student, has suggested to me the idea of extending the horizontal board one or two feet beyond the lower extremity of the inclined board, in order to afford facility of fixing the patient's pelvis, and prevent it from rotating either by unwary or intentional movements. It appears to me, however, that such movements cannot be easily effected, and at any rate may be prevented by passing a roller, a handkerchief, or strap, under the angle formed by the union of the lower ends of the horizontal and inclined boards, and around the pelvis of the patient, so as to secure it to the frame. Mr. Cloud's plan, however, is ingenious, and would certainly obviate every difficulty.

ing in the large one, being intended to fill it at all times, except when the patient is at stool. The foot cushions are made of the same material as the mattress, being stuffed and quilted, are three inches broad, nine long, and one thick: they are placed vertically between the mortices of the foot board, and secured to it by tacks, their lower ends resting on the mattress. The gaiters are made of cloth, lined with soft buckskin, and exactly resemble those commonly worn by foot soldiers. They have four straps about twelve inches long attached to each, two near the heel, and two near the instep. Lastly, there are two round pins six inches in length, passed through holes in the inclined board, near its lower end. This constitutes the whole apparatus, and will be found suitable in its dimensions for a patient five feet eight or ten inches in height. For persons of greater or less stature, the dimensions must be varied, always observing the just proportion. If necessary the machine can be so contrived as to increase or diminish the angle, and in this way adapted to persons of different sizes. (See the plate.)

Every thing being adjusted, the patient is laid on a firm mattress, placed on a bedstead, with a board bottom; the triangular frame, with its appurtenances, is then to rest on the mattress near its lower end; the extremities of the patient are next elevated, and in this position are gently extended upon the inclined plane, (covered by its mattress,) the feet are brought in contact with the foot cushions, and are secured to them by the gaiters, previously laced to the ankles, the straps being passed through the mortices, and tied on the back of the upright board. The fractured limb being straightened and laid carefully alongside of the sound limb, the two pins are placed in the inclined board, and serve the purpose of preventing the thighs from slipping out of their position. The patient's hips and body rest upon the common mattress covering the bedstead, his head and shoulders are elevated to a convenient height, by pillows or a bed chair, and his whole position, if any conclusion may be drawn from the feelings of a person in health, while placed for a considerable time in a similar situation, will be found by no

means uncomfortable. To enable him to have a stool, or pass urine, it will only be necessary to withdraw the small bolster from the opening, by passing the hand under the inclined board. The pan is then readily introduced, and is as easily withdrawn, without giving rise to any movement on the part of the patient. After this the bolster is replaced and confined in its situation by the door, and a small wooden slide or strap.

If, at any time, the regular apparatus cannot conveniently be made, a substitute for it, I conceive, may be contrived in a few minutes. A plank of the proper breadth and two or three feet long, may be placed upright and screwed or nailed to the end of a common bedstead. Another piece somewhat longer, may next be fastened by brads or a cleat, to the upright, a few inches from its top, the other end resting upon the mattress, so as to form an inclined plane of the necessary elevation. A blanket or quilt, properly folded, should then be laid over the inclined board, and the feet secured to the vertical piece by a silk handkerchief passed around each ankle, in the form of the figure of 8, and the ends through holes in the upright. Pressure may be taken off the patient's feet by cotton or any soft padding.

It will be seen in a moment, how this machine operates. The two feet, by means of the gaiters, are placed on a level and there retained; the lower fragment of bone cannot, therefore, be drawn upon the posterior surface of the upper fragment, as usually happens, in oblique fractures, but must be kept in its natural situation; the weight of the body hanging by, and operating upon the superior fragment, draws it downwards, removes it from the inferior fragment, so as to prevent overlapping, and thereby preserves the whole limb of its natural length—*extension* being made upon the ankles, *counter extension* by the weight of the body.

Perhaps it may be asked, how does this apparatus differ from that of White, Bell, or Cooper? I answer, in every possible way—in principle as well as construction. In one, the limb is placed in the *extended* position, in the other in the *flexed*. To keep it flexed a triangular box is used, the

thigh rests upon one side of it, the leg upon the other, where the calf is painfully pressed, while the angle of union of the inclined boards exerts intolerable force upon the ham. The foot, also, hangs loose and vacillating, and the diseased thigh being mounted over the frame, while the sound one is stretched upon the bed, rotation of the pelvis and deformity is the necessary consequence. Besides, the patient's leg, from hanging in a dependent posture, becomes swelled and œdematous, and other inconveniences arise, which I have formerly pointed out. But, on the other hand, observe the advantages resulting from the *extension* of the limb. The feet are kept on a level, by which extension is effected—*counter* extension is maintained by the weight of the body; therefore, no shortening can take place. Indeed, in this particular contrivance, there is a combination of flexion and extension; the thighs are bent upon the pelvis, by which the muscles are relaxed, and the legs extended upon the thighs. The very principles, then, of Pott are, in a great measure, preserved without the inconvenience of their application; and yet extension is produced. Again—the limbs being elevated, the inflammatory symptoms are prevented, or subdued by *position*—the blood being drained from the lower extremities and determined to other parts, whereby, pain, swelling, and œdema, very common attendants upon fractures, are effectually guarded against.

With respect to the latter circumstance—the removal of inflammation by *position*—I may speak with the utmost confidence. It is now well known, perhaps, throughout the United States, that Dr. Physick has, for a great length of time, been able by position alone, not only to relieve pain and remove inflammation, but to effect the most perfect cures after other remedies had failed. The practice originated with him, and he is entitled *exclusively* to the merit of having established it upon the firmest basis.* For a con-

* It has been suggested, that this practice of draining the limb of its blood, which Dr. Physick has found so useful in numerous inflammatory affections, in the suppression of hemorrhage, &c. is not novel, or peculiar to him, but may be met with in some of the old writers, and the following

siderable time I have followed the plan and never without decided benefit. Upon commencing a tour of duty in the Alms-house, last summer, I immediately ordered a number of ulcerated legs, which under the ordinary treatment had proved very obstinate, to be placed over inclined frames considerably elevated. The benefit was soon apparent, the pain and swelling rapidly diminished, granulations sprouted up, and in a little time most of the patients were cured and discharged. I have now under treatment, a gentleman, from whose knee I removed a cartilaginous body nearly as large as the patella. The inflammation which followed was very violent, but subsided rapidly after the elevation of the limb. I had a similar case last winter, successfully treated upon the same principle. I have tried the plan in several cases of acute inflammation of the synovial membrane of the knee, and with decided advantage in every instance. Indeed, in some of the cases, a disease has been cured, I have reason to believe, in a few days, which under any other treatment, would have terminated in the destruction of the joint and perhaps in the loss of the patient's limb or life. But there is now no necessity for illustration on the subject; the practice is too well known and too rational to be called in question. If then it be so beneficial, in other diseases, have we

passage from Petit has been selected in proof. "The patient's body must be placed commodiously, the wounded part a little raised to facilitate the return of the fluids." It is obvious, however, from this, that Petit had no very strong conception of the importance of such practice, or it is reasonable to suppose that he would have expatiated at length upon it; nor is it very certain, from his expressions, that he intended to point out the necessity of facilitating the return of the blood, as he expressly says "the fluids," and to this term different meanings may be attached. It is possible, also, that similar expressions may be found in other writers, but the man who from an obscure hint, is able to establish any general practice of great importance and acknowledged utility, is entitled to much greater honour, in many instances, than the original projector. Fulton, it is well known, was not the first to think of a steam boat, but who before his time could render it useful? One thing, however, is very certain, that Dr Physick derived no hint from Petit or any other writer, and therefore deserves as much credit as if such passages had never existed.

not a right to expect a similar result in fractures of the thigh? And if so, is not the position I have advised, independent of other circumstances, the most favourable that could have been selected? Are there not also other advantages possessed by this apparatus? Is it not equally well adapted to fractures of both thighs, as of one only? Can it not be employed with similar benefit in fractures of one or both *legs*, in fractures of the patella, &c.?

Perhaps it may be asked, will not the gaiter cause inflammation and ulceration, by its long continued pressure upon the ankle? This can only be determined by experiment. So far as a judgment can be formed, however, without such experiment, I am inclined to believe that no inconvenience of this nature will arise. The limbs are not supported by the feet alone, or in other words, the patient is not *suspended* in the air by his *feet*, but a considerable part of the pressure is taken off by the gradual support afforded the thigh and leg by the inclined plane and mattress beneath them. But, supposing ulceration to take place, will not the same happen from the extending bands of Dessault and others? Should it ever occur, however, in the apparatus I have described, I think that an effectual mode might be found to relieve it—by removing the gaiters from the ankles, and then placing bands around the knees, so as to secure them to the frame beneath. In this way extension and counter extension may be kept up under every possible difficulty.

But these are mere suggestions, which are yet to stand the test of practice. As such I offer them, but at the same time I wish it to be understood that I do not intend the apparatus to supersede the improvement on that of Hagedorn. The latter, from my own experience, I know to be useful, and from several letters received from respectable practitioners, in different parts of the United States, I find that it has also proved effectual in *their* hands. Moreover, the flattering reception my essay has met with in Europe, where it has been reprinted, is sufficient to induce me to believe that the plan is considered not altogether destitute of merit.

I shall, notwithstanding, very willingly abandon it for a better, whenever such can be found, whether it originate with myself or any other person. If the method which I have offered in the foregoing pages fail, I shall be the first to announce it. All I ask from others, is a *fair trial* before it is condemned. *Valeat quantum valere potest.*

CASES.

By the kindness of a friend, we have had put into our hands, perhaps the only copy, which has been received in this country, of a pamphlet recently published in London, purporting to be "An Account of the last illness, decease, and post mortem appearances of Napoleon Bonaparte. By Archibald Arnott, M. D. surgeon 20th regiment. To which is added, A Letter from Dr. Arnott to lieutenant-general sir Hudson Lowe, K. C. B. &c., giving a succinct statement of Napoleon Bonaparte's disease and demise."

The following preface to the pamphlet, sufficiently explains the object of the publication.

"HAVING been in attendance on that great and extraordinary character, Napoleon Bonaparte, for some weeks before he closed his mortal career, I have been solicited by some friends in England to give to the world an account of his last illness, decease, and *post mortem* appearances, and I have been the more particularly urged to do so, as *no* other English medical person saw him in his death-bed sickness: for although every medical aid the island afforded was offered by sir Hudson Lowe, and recommended by myself when I observed the disease to put on alarming symptoms, he uniformly refused it, and even required from his family a promise that, in the event of his ever becoming insensible, no other medical person than Professor Antomarchi and myself should see him.

From the time I first visited Napoleon Bonaparte, and during my attendance on him, I every day noted the symptoms and progress of the disease. These notes, with but little addition or alteration, form the following few pages, and I hope they will convey to the reader a fair view of Napoleon Bonaparte's fatal malady. It may, however, be necessary to premise that my remarks were always written in haste, and only intended for my own reference, not with the most distant view of their ever meeting the eye of the public."

Conceiving that every thing relative to this most distinguished personage, will be sought with curiosity, and perused with avidity, we lose no time in laying this interesting document before our readers. We omit, however, that part of it which regards the *post mortem* examination—having inserted it in our last number—and as the letter to Sir Hudson Lowe is merely an abridgment of the general account of the case, we also exclude it.

EDITOR.

ART. IX. *The Case of Napoleon Bonaparte.*

BEFORE I visited Napoleon Bonaparte, I was consulted upon his case on the 25th of March, by his own medical attendant, Professor Antomarchi, who stated to me that Napoleon Bonaparte had long been labouring under some great derangement of function in the digestive organs, which was characterized by gastrodynia, nausea, and vomiting, especially after taking food, very obstinate costiveness, and great wasting of flesh and strength. He further mentioned, that on the 17th of that month, (March,) Napoleon Bonaparte had been seized with a febrile attack, which he, (Professor Antomarchi,) in Italian, termed *febbre gastrica pituitosa*. He informed me that he had administered an emetic, cathartics, and antimonials in small doses, with the view of determining to the surface at the onset of the fever: however, he said, the symptoms were still urgent, viz. increased heat, great prostration of strength, pain in the epigastric region, most distressing vomiting, and constipated bowels.

Our attention was directed, in the first place, to the state of the *primæ viæ*, and we accordingly recommended purgatives. But as Napoleon Bonaparte was somewhat capricious in regard to taking medicine, it was left to Professor Antomarchi to give him any cathartic he could persuade him to take, so as to produce the effect we had in view. We also advised a large blister to be applied to the region of the stomach, and saline draughts in a state of effervescence to be given.

Two days after, I again met Professor Antomarchi, who

informed me that Napoleon Bonaparte had objected to the use of medicine, or remedies in any shape, and preferred leaving the disease to nature.

On the evening of the 1st of April, at half past ten o'clock, Professor Antomarchi called on me at the orderly officer's quarters at Longwood, and said that he had "just come from the emperor, who wished to see me immediately." I accordingly accompanied Professor Antomarchi, and was led by him through a labyrinth of passages and rooms dimly lighted. When we reached Napoleon Bonaparte's bed-room there was no light whatever in it—it was perfectly dark. Count Montholon met me at the door—I knew his voice:—he led me up to Napoleon Bonaparte's bed-side, and introduced me. After the usual ceremony of introduction had passed, I inquired into his state of health, and the nature of his complaints. I could not see him, as he would not permit a light to be brought into the room, but felt him. The pulse was tranquil, heat moderate, and the moisture on the skin rather more than natural. He complained much of his belly, which I examined, but could discover no tension or hardness: the bowels were slow, and appetite bad. His voice was strong, and he had some cough.

Not being able to see him, to judge rightly of his complaint, we did not prescribe any thing that night. However, it was arranged that I should continue my attendance on him in conjunction with Professor Antomarchi.

On visiting Napoleon Bonaparte on the morning of the 2d of April, we were informed that he had passed a restless night, had perspired profusely, and was then in a state of great debility. Pulse was 76 and regular, heat moderate, thirst inconsiderable, tongue loaded, countenance remarkably pallid. He complained of a gnawing pain in his stomach, with constant nausea and vomiting: the bowels were very slow, seldom an evacuation without the assistance of an *enema*: urine natural—spirits appeared much depressed. He manifested strong objections to taking medicine, and refused to take any in a fluid shape: indeed, his stomach was so irritable, that it was seldom either food or medicine

would remain on it. However, under all circumstances, Professor Antomarchi and myself considered it most essential to clear the *primæ viæ*,—we accordingly proposed to our patient that he should take medicine for that purpose immediately, and further recommended him to take jellies and such other light nutriment as the stomach would best bear. At first he objected to medicine altogether, but at length we did obtain from him a conditional consent to take some aperient, and as he gave the preference to the form of pill, we ordered the *pilul. aloes comp.* every six or eight hours, as occasion should require.

On visiting him again in the evening, we found he had not taken the medicine, as recommended in the morning, nor could we prevail upon him to take it, and having had no alvine evacuation for forty-eight hours, we ordered an *enema*.

3d April. He had a small evacuation from the *enema*, passed a tolerably tranquil night, and slept a good deal: his pulse was 76, heat 96 ;—skin more moist than natural,—indeed, the perspiration was evidently much increased: he was very low and drowsy, but his stomach was easy. He told me he could eat nothing—he had no thirst—expressed a wish to take some wine, and seeing nothing to contra-indicate the use of a small quantity, we allowed him a little claret, and gave directions to continue to take jellies, light puddings, milk, and other mild fluids, as before. The bowels were still obstinately constipated, yet we could not persuade him to take purgative medicine in any form, although we urged it in the strongest manner: but there was really so much apathy and indifference about our patient, that our arguments made no impression on him. In the evening the pulse got up to eighty—he had a small alvine evacuation from an *enema*, but in other respects he was the same as in the morning.

He passed a bad night between the 3d and 4th of April, being much distressed with tension of the belly, vomiting, and sense of suffocation, and having an accession of fever, which continued until morning, when a profuse perspiration

came on, the febrile symptoms abated, and by noon there was a good clear remission. The pulse was 80, and heat not more than natural. The bowels were still constipated, yet we could not prevail on him to take mild cathartics, as occasion required, although we carried conviction to his mind of the expediency of what we recommended. *Enemata* were the only remedies he would make use of, and the evacuations from them were very scanty.

On the morning of the 5th of April, when I called at Longwood, Professor Antomarchi informed me that "the Emperor had been very ill during the night." His report to me was, "that he had been very feverish, had vomited four times, that what came off the stomach was phlegm, and that he had continual nausea: about two o'clock in the morning, however, the febrile symptoms began to decline, and a clammy perspiration to come on, and there was tension of the abdomen, accompanied with pain, which was increased on pressure."* However, by the time I made my visit these symptoms had ceased—but I found him in a very exhausted state, and the irritation at the stomach considerable: he had taken scarcely any nourishment, and still refused to take medicine.

On the 6th April he was very low and weak—had a paroxysm of fever the preceding evening, the hot and cold stages of which were not very perceptible, but the sweating that followed was profuse. He scarcely took any thing in the shape of nourishment—pulse was 70, and regular—heat natural. We did succeed in persuading him to take some aperient medicine that day, but it was so small a quantity that it had no effect upon him. We also recommended some cordial and tonic medicine, but could not induce him to take any thing more. He was that evening seized with coldness of the extremities, pain and tension of the stomach,

* Molto febbre, ha vomitato quattro volte della pituita, continuo eccitamento al vomito o nausea: alle ore 2 circa dopo la m. zza notte ha incominciato la diminuzione, o declinazione della febbre, con viscidî sudori, gravezza di testa, sonnolenza, angoscia ed tensione addominale con sensazione dolorosa al tatto.

vomiting, headache, and restlessness: all these symptoms abated towards morning, and in the course of the day he was tolerably tranquil. He had an alvine evacuation from an *enema*.

He had a smart accession of fever on the evening of the 7th, and the perspiration until morning was very profuse: he was persuaded to take some purgative pills that day, which produced three copious alvine evacuations, and which wonderfully mitigated the symptoms, especially the vomiting and pain at stomach. He was more cheerful than he had been for some days before. We recommended mild purgatives, and again the tonic medicine.

On the 8th he took some more purgative medicine, from which he had some copious evacuations: the relief he experienced from them was very considerable—but although convinced of the benefit he derived from the medicine, he could not be prevailed upon to pursue the plan of treatment recommended.

On the 9th and until the evening of the 10th, the *primæ viæ* continued free: he had several copious dejections, and during that time he was certainly comparatively easy. But on the evening of the 10th, the nausea and vomiting returned, the stomach rejected every thing he swallowed, and his strength appeared to be sinking rapidly—yet the pulse was 72 and regular. He on that day said to me, “that the fever was now past, and that he had returned to the state he had been in for the last eight months, viz. great weakness and want of appetite:” at the same time he placed his hand over the liver, and said to me, “le foie,” upon which, although I had done it before, and given my opinion that there was no disease of the liver, I examined the right hypochondriac region again, and not finding any indication or fulness whatever, and judging from the symptoms in general, I told him, “that I did not apprehend there was any disease of the liver—that perhaps there might be a little want of action in it.”

On the 11th of April the nausea and vomiting were very distressing, and had been so all the night betwixt the 10th

and 11th. The bowels were very slow, but he would not take any medicine to assist their action. With the view of allaying the violent retching, we gave him on that day a few minims of tincture of opium, but it did not produce the desired effect. He complained of a burning heat in the right *hypochondrium*, and referred it to the liver.

During the night of the 11th he was very restless, and had several severe fits of vomiting, which continued throughout the whole day of the 12th. What he vomited was a viscid mucous matter. After the vomiting he became quite exhausted, and signified to me that he was convinced medical aid could be of no avail to him, and that he was labouring under a fatal disease. At my request he took a little jelly and warm wine, which rested on his stomach. On that day he asked me "how a person died of debility, and how long one could live, eating as little as he did."

On the 13th Professor Antomarchi stated to me that Napoleon Bonaparte had passed a bad night, that he had been very restless and feverish until morning, had vomited two or three times, and that there was likewise some tension of the belly. I found him very low and weak, his spirits seemingly much depressed. He told me that he was becoming every day weaker and weaker. He was seized with a paroxysm of vomiting while I was with him, and what came off the stomach was a something he had eaten a little while before. With a view of alleviating the severe vomiting, he was persuaded to take a tonic draught composed of *infus. columb.* and *tinct. cinnamon.* which had the effect of lessening the vomiting in some degree. Although the *prima via* were much constipated, he would not take any laxative medicine—consequently, the only means we had of procuring alvine evacuations were by *enemata*.

On the 14th of April he was better, and in good spirits—there was a mitigation of all the symptoms. He had rested tolerably well during the night, and had taken some nourishment, which remained on his stomach. Towards evening, however, the irritation at stomach returned, and altogether he had a very bad night.

On the morning of the 15th his strength had sunk considerably, he was covered with a cold clammy perspiration. The pulse was 90, small and feeble. He took a tonic draught which he fancied assuaged the vomiting a little—after that he took some nourishment, and retained it on his stomach.

He had a quiet night between the 15th and 16th, that is, he slept well and was very easy—but towards morning he was bathed in perspiration, the pulse was 80 and weaker, heat lower than natural, and the skin had a clammy feel. He had two small dejections from *enemata*.

On the 17th of April there was an aggravation of all the symptoms—the vomiting increased, and his strength sunk—the pulse was small, frequent, and irregular—the whole surface was cold. He was comatose, and, when roused, complained of a sense of suffocation. The *primæ viæ* being constipated, we pressed him to take a cathartic that day, but he refused: an *enema*, however, was administered, which produced an evacuation more copious than ordinary. After that, and towards evening, he roused—the pulse fell to 76, and was regular—the heat became natural—he appeared cheerful, and expressed a wish to eat some minced pheasant, with which he was indulged, and he took after it about a table-spoonful of claret, mixed with two of water.

Professor Antomarchi's report to me on the morning of the 18th was, "that he had had a very bad night. He commenced vomiting at nine o'clock in the evening, and continued until five in the morning—he had some sleep, but it was disturbed."* He became tranquil towards morning, the pulse was 80, heat less than natural, skin inclined to be clammy, spirits appeared dejected, and he seemed averse to conversation. He attributed his bad night to a tonic draught he had taken the preceding evening. He took a little vermicelli soup when I was with him, but the stomach rejected it instantly. He had a small alvine evacua-

* Pessima notte, ha cominciato a vomitare alla ore nove della sera, sino alle cinque della mattina con interrotti sonni.

tion from an *enema* the night before. He complained of a sensation of heat in the right hypochondrium, and referred it to the liver ("fegato:") I gave my opinion then, as I had done before, that I did not think the liver was affected. Both Professor Antomarchi and myself having observed, that when the first passages were free, the symptoms were less violent, we pressed him very much at that time to take laxative medicines—but it was of no use, we could not prevail upon him to comply with our wishes.

On the morning of the 19th of April he was very composed, and had passed a good night. Professor Antomarchi's account of him to me was, "that he had a tolerably quiet night, had not vomited, and at midnight he had eaten some potatoes: this morning the pulse is small and regular, and he has taken a little vermicelli soup."* The pulse was 76, the state of the skin and heat was natural, his countenance was brighter, he seemed very cheerful, and was much inclined to conversation. The pain in the right *hypochondrium*, that he had complained of, left him after the bowels were well freed by an *enema*: he took some nourishment when I was with him rather with a relish, and it rested on his stomach. He told me that when he went to sleep he awoke with a sensation of heat across the stomach, which brought on nausea, and sometimes vomiting.

He passed a good night betwixt the 19th and 20th of April, only that from eleven to three o'clock he was somewhat teased with a sensation of heat in his bowels, and of choking, accompanied with thirst; and when he drank any thing, it was with difficulty he could swallow: this is as he expressed it. In the morning he was very composed: heat natural—the stomach had retained every thing he had eaten since the day before—and he had had a good alvine evacuation from an *enema* at nine that morning: towards evening, however, he complained of a pain and heat about the *scro-*

† La alquanto tranquillo, non ha vomitato, a mezza notte ha mangiato poche patate, questa mattina polso piccolo e regolare, e mangiato una suppa di vermicelli.

biculus cordis—said he had a continued nausea, and that it was only by keeping himself very quiet he did not vomit : yet the little nourishment he took rested on his stomach.

On the 21st of April Professor Antomarchi's report to me was, "the Emperor has passed a good night. He has eaten twice in the night without vomiting any—this morning, however, at seven o'clock, he vomited a little of what he had eaten."* I found him very composed, and he told me he was free from pain. His pulse near 75—state of the skin and heat quite natural. He had two very good alvine evacuations that morning from an *enema*.

On the morning of the 22d of April he felt a sensation of heat, with dryness in the stomach, and a sense of suffocation—had vomited a little the night before, and likewise some before I saw him that day :—what came off his stomach was shown to me, it was a something he had eaten the day before, quite undigested. After the vomiting, his stomach was much relieved, and he conceived himself better on the whole—he had passed a very good night, and had slept several hours. He on that day referred all his disease to the stomach. He had a small dejection from an *enema*. The urine deposited a lateritious sediment. Pulse was 84, and more feeble. For the purpose of gently exciting the action of the *primæ viæ*, we prevailed on him that day to take a weak solution of sulphate of magnesia, and an infusion of gentian, with the addition of a little tincturé of the same, according to the following form :

R. Magnesiæ Sulphatis ʒvj. solve in Aquæ Puræ octa.
adde Infus. Gentianæ compositæ ʒvj. et Tinct. Compositæ ejusdem ʒss. m. f. mistura, cujus sumat cochlearia tria ampla subinde.

23d April.—Pulse was 78, and heat natural—had a small dejection from an *enema* that morning—had vomited twice

* L'Imperatore ha passato una buona notte non ha vomitato, ha mangiato due volte nella notte, questa mattina ha vomitato alla ore sette poco alimento.

since the former visit. He had taken the medicine ordered, and it had rested on his stomach : he thought himself stronger, and we ordered him to continue the medicine and diet as before. He continued tolerably easy all the day of the 23d, and took a little light nourishment about seven in the evening—he, however, vomited it soon afterwards. He had some accession of fever at nine, but upon the whole was easy—slept the greatest part of the night, and on the morning of the 24th there was a clear remission of all the febrile symptoms—the pulse was at 78, and heat natural. He had a copious alvine evacuation that morning, but complained of great weakness and of giddiness : we gave directions to go on as before. He was very ill on the night between the 24th and 25th : the vomiting was incessant, and he had no sleep whatever. In the morning his strength was much sunk—the pulse was 82, and weak. He could not be advised to continue the medicine, but had a small dejection that morning from an *enema*. The vomiting continued with little intermission throughout the whole day of the 25th : the stomach rejected every thing that was swallowed. Observing that when the *primæ viæ* were open, the nausea and vomiting were less violent, I urged him to take some aperient medicine, and being convinced he had derived benefit from the solution of the sulphate of magnesia in the infusion of gentian, I pressed him to take a full dose of that medicine, and accordingly he took it that morning. It emptied the bowels well : it had not, however, the usual good effect of lessening the vomiting—that distressing symptom continued. He had an evening accession of fever, was restless, and raving at times until three o'clock in the morning of the 26th—he then went to sleep, and did not awake until seven : soon after that he was seized again with violent vomiting : what came off the stomach was something undigested, mixed with phlegm of a ropy consistence.

On the morning of the 26th the pulse was 86—heat lower than natural, with a cold, damp, clammy perspiration all over him. He complained much of pain in the hypochondriac and epigastric regions, which he referred to his sto-

mach and liver. He on that day asked me what was to be done for him, and what I considered his disease to be? The symptoms, I told him, I thought indicated some great derangement in the digestive organs. He put the question to me again that day, if I supposed his liver affected? My reply was, that I did not think there was any diseased structure of that *viscus*,—perhaps there might be a want of due action in it. Professor Antomarchi and myself both agreed that the same mode of treatment should be pursued.

On the morning of the 27th of April our patient was low and comatose, had passed a restless night, and had frequent fits of vomiting. I had not been long at his bed-side before he was again seized with violent retching and vomiting, and on examining the basin, I observed that what had come off the stomach was a dark coloured fluid resembling coffee-grounds, and very offensive. That vomiting continued until half after three o'clock P. M., it then ceased and he went to sleep. Pulse kept at 84, and heat about natural. In the evening he was more tranquil, free from pain, but low and exhausted. He would not take any medicine, and as the first passages had not been emptied for 40 hours we ordered an *enema*. We also wished to apply a blister to the region of the stomach, but this he likewise objected to, on which we proposed a warm stimulating plaster, which he consented to, and we accordingly applied one of the *emplast. aromaticum*, of the Dublin Pharmacopœia.

On the morning of the 28th I was informed by his attendants that he had been vomiting frequently in the course of the night, that he still continued to do so, and what came off the stomach had the same appearance as it had the day before: it was a dark-coloured grumous fluid, and contained small specks of blood. Pulse was 84 and weak, and there appeared great exhaustion. He talked incoherently, had no alvine evacuation from the last *enema*, yet he most pertinaciously refused to take medicine, and would not allow even another *enema* to be administered: towards evening, however, the bowels becoming very uneasy, he was prevailed upon to allow one to be administered, which

procured two small evacuations—yet he passed a sleepless night, raved greatly, but had less vomiting and what came off the stomach was not so dark-coloured.

He had three hours sleep on the morning of the 29th: when he awoke he was sensible and composed, the pulse 87. Sometime during the night, in a raving fit, he had torn the *emp. aromaticum* off, but consented to have a blister applied over the stomach, which was done forthwith—and with the view of tending to lessen that dreadful irritation of stomach, we prescribed the following:

R. Aquæ Menthæ Virid. ℥iss.
 Potassæ Subcarbonatis ℥i.
 Succi Lim. Recentis q. s. ad saturand.
 Tincturæ Calumbæ minima xxx.
 ——— Opii ——— v.

Misce ut fiant haustus 6^{ta} quaque hora sumendus.

30th April. The blister over the stomach had risen, and in the night Professor Antomarchi had applied one to the inside of each thigh. The draughts were not taken as ordered. He slept for some hours in the beginning of the night; and towards morning, although he did not sleep, he lay quiet and composed. He vomited several times, but not so much, nor was the matter that came off the stomach of such a dark colour as before—heat was natural and general—pulse 90 and regular—intellect was more collected—his respiration easy, and he lay in a composed state. Count Montholon informed me that he had *singultus* for two hours during the night. He had no alvine evacuation, nor could he be advised to use any means to procure one. Betwixt 11 and 12 o'clock that night our patient was seized with a *rigor*, accompanied with great anxiety and *dyspnœa*, and followed by *singultus*.

On the morning of the 1st of May he was much worse, his strength had sunk considerably, there appeared more anxiety than usual about him, the pulse had become more frequent, the skin clammy, the heat below natural, he had

strong *singultus*, and talked incoherently. An *enema* was administered, which produced a copious evacuation.

On the morning of the 2d of May there was an aggravation of all the symptoms, almost continued *singultus*, anxiety, restlessness, and quick and oppressed respiration. The heat was natural and equable, the extremities keeping warm. Had some retching and vomiting. Pulse 102 and small, and in the evening rose to 108. He went to sleep at 10 o'clock that night, and did not awake until 3 next morning. He was then insensible, and showed great anxiety and restlessness. Pulse 100, small and weak—had no vomiting since the night before, and then it was inconsiderable. *Singultus* became very strong and distressing, the delirium increased, and he began to articulate very indistinctly. Having had no alvine evacuation since the morning of the 1st, an *enema* was proposed, but our patient was so unmanageable, that it could not be administered. In the course of that day (3d May), all the symptoms became more aggravated, added to which a fulness and tension of the belly came on. I then conceived it indispensable to free the *primæ viæ* by some means, and being aware of our patient's aversion to medicine, I recommended a dose of calomel to be given, which might be done without his knowledge—accordingly ten grains of that medicine were given at 6 o'clock that evening. The calomel commenced its operation at half after eleven, five hours and a half after it was taken, and before noon next day it had produced five copious alvine evacuations, exactly resembling tar in colour and consistence, and remarkably fetid. After this he was somewhat relieved, there was less restlessness and anxiety, he was more sensible to objects around him, but was in a state of great debility: the pulse was small, weak, and easily compressed—the *singultus* continued, and with the view of relieving it, we gave a draught of *Tinctur. Opii et Sp. Æther. Vit.* and to support his strength he took a little jelly and wine occasionally. At this time milk was particularly recommended to him, but it was objected to. I left him at 9

o'clock that evening (4th May), in a sound sleep, breathing easy, and I was informed by those who were watching him, that he was tolerably composed and easy during the night, and until 5 o'clock in the morning: he was then seized with vomiting, and a dejection passed involuntarily. I was called immediately, and on examining the matter that had come off the stomach, I found it resembled the dark-coloured fluid which he had vomited on the 27th April. He had then great dyspnœa, there was a total loss of muscular motion, the under-jaw had dropped, and he had lost the power of deglutition—the eyes were fixed, the pulse varied from 102 to 110 in the minute, was small and weak, intermitted, and was easily compressed.

That nothing should be left undone, although *moribundus*, sinapisms were applied to the feet, blisters to the legs, and one to the *sternum*, but none of them took effect—and all the symptoms increased until eleven minutes before six o'clock, P. M. when he expired.

Remarks.

IT will no doubt appear singular that a person of Napoleon Bonaparte's habits should have been affected with scirrhus and cancer of the stomach—a man who was noted for temperance, and never in his life indulged in any excess which could tend to produce such an affection.

I have seen the disease before, but it was in men addicted to ardent spirits,—decided dram drinkers.

We are given to understand, from great authority,* that this affection of the stomach cannot be produced without a considerable predisposition of the parts to the disease, and that when there is no previous disposition, the stomach does not become affected with that disease. Whether Napoleon Bonaparte had any hereditary disposition towards this disease, I will not venture an opinion: but it is somewhat remarkable, that he often said that his father died of

* See Dr. Baillie's inestimable book on *Morbid Anatomy*, p. 141, 142.

scirrhus of the pylorus—that the body was examined after death, and the fact ascertained. His faithful followers, Count and Countess Bertrand and Count Montholon, have repeatedly declared the same to me.

If then it should be admitted that a previous disposition of the parts to this disease did exist, might not the depressing passions of the mind act as an exciting cause? It is more than probable that Napoleon Bonaparte's mental sufferings in St. Helena were very poignant: by a man of such unbounded ambition, and who once aimed at universal dominion, captivity must have been severely felt.

The climate of St. Helena I consider healthy—the air is pure and temperate, and Europeans enjoy their health and retain the vigour of their constitution, as in their native country.

It is true, I have witnessed a great deal of disease in St. Helena; but that, viz. dysentery, and other acute diseases of the abdominal viscera, prevailed among the troops. The sickness of English soldiers, however, is *not* always a criterion of the insalubrity of a colony: their habits are very different from those of the higher ranks of life—they do not take that care of themselves which is so indispensable in a tropical climate to guard against atmospherical vicissitudes—they are also prone to intemperance, which renders the system more susceptible of disease—added to which, the duties of the soldiers in St. Helena were very severe, the strength of the garrison giving only *one* relief for night duty—and the working parties and fatigues were moreover very laborious on the days the men were off guard. But the officers who had little night duty retained their health and strength as in Europe. I can therefore safely assert, that any one of temperate habits, who is not exposed to much bodily exertion, night air, and atmospherical changes, as a soldier necessarily must be, may have as much immunity from disease in St. Helena as in Europe—and I may therefore further assert, that the disease of which Napoleon Bonaparte died was *not* the effect of climate.

Scirrhus or cancer of the stomach is generally an obscure

disease—I know of no certain diagnosis of it: nausea, vomiting and obstinate costiveness, are usually present, but these symptoms are also characteristic of other diseases of the chylopoetic viscera. Nevertheless, in the case of Napoleon Bonaparte, I did entertain a notion that some morbid alteration of structure in the stomach had taken place. My attention was first drawn to this when I learned that his father had died of scirrhus of the pylorus—and on the 27th and 28th of April, when he began to vomit the dark-coloured offensive fluid, I had little doubt but that ulceration had taken place in the stomach.

The history Napoleon Bonaparte himself gave me of his illness, together with corresponding information I had from the persons composing his family, convinced me that he had been longer affected with the disease than was imagined. I was informed that during the whole year of 1820 he had nausea and vomiting occasionally, and frequent accessions of fever. He lost altogether his natural appetite, and his countenance became remarkably pallid. Even so far back as the latter end of the year 1817 he was affected with pain in the stomach, nausea and vomiting, especially after taking food. I am therefore inclined to think that the disease was *then* in its incipient stage, because from that time all the symptoms progressively increased till he died. The anomalous accessions of fever, and other constitutional derangements he had been so long affected with, were, in my opinion, hectic symptoms—and I firmly believe that the sharp febrile attack he had on the 17th of March, although supposed to be the commencement of the disease, was nothing more than an aggravated paroxysm of hectic. Every practitioner is aware how irregular fits of hectic are, and how they vary from one another, seldom continuing to return in the same manner.* In Napoleon Bonaparte's case the pulse was never very frequent; I could not, however, find out how it beat when he was in good health: its

* Porro hectica raro sui similis est per tres accessiones. Vide Gulielmi Heberden Commentarii de Morborum Historia et Curatione, p. 162.

standard may have been low. There are few diseases in which the pulse is a better diagnosis than in hectic fever—yet in some patients, although we find the health and strength wasting daily, the pulse beats as quietly and regularly as in perfect health.*

I conceive it would be an injustice to those distinguished personages who composed Napoleon Bonaparte's family, Count and Countess Bertrand, and Count Montholon, as well as to Monsieur Marchand, his first valet, if I were not to mention here their unremitting care and attention to him in his last illness: no language of mine can sufficiently express the solicitude they evinced for his recovery, and how eagerly they vied with each other in administering those little attentions, more easily conceived than described, but so essential and soothing on a sick bed—The scene of sorrow Longwood House presented on the evening that great and extraordinary man breathed his last, will never be erased from my memory.

* *Pauci etenim morbi sunt in quibus plura nos docet arteriarum motus. Tamen in hoc quoque qui nimis secure illis confidit, nã ille se interdum haud mediocriter delusum sentiet. Uni ex viginti, ut conjicio, licet omnia insanibi is ma i signa sint, et vires atque valetudo indies consumantur, arteriã usque ad mortis horam neque celeriter, nec quocunque modo inordinate moventur, sed prorsus ut in optima sanitate. Vide Gulielmi Heberden Commentarii de Morborum Historia et Curatione, p. 165, 166,*

REVIEWS.

THE following review has been sent to us by a friend, for whose judgment and literary skill we have much respect, and to whom this Journal owes many obligations. We do not profess to be entire converts to the doctrines which he discusses—though we are willing to believe that good has, and may further arise from such investigations. That they have already led to a more distinct and accurate knowledge of the structure of the brain, seems to be generally admitted. It has not hitherto been in our power to give to the work, which is the subject of the article, so attentive a perusal as to enable us to form any definite opinion of its merits. But we have heard it well spoken of by those who are competent to determine, as affording a luminous explanation, and a very able defence of the curious system it labours to inculcate.

We are happy to embrace the opportunity now before us, of expressing the pleasure we have derived from reading the American part of this performance. As a literary production, it will be found to have very high pretensions, exhibiting a rapid and masterly exposition of the general arguments in favour of the doctrines espoused—distinguished by so much good sense, and sound learning, that we are persuaded, it will produce a strong and favourable impression on the minds of those who may seriously study the subject.

The want of an account of the anatomical discoveries of Gall and Spurzheim, for some unknown reason omitted by the author, will not be very readily excused by physicians bred in an American school. It is particularly necessary to a due understanding of the whole evidence, which goes to place the organs of intellect in the convoluted sur-

face of the brain : of these discoveries, the editor has inserted a concise account, extracted from the "*Recherches sur le Systeme Nerveux, &c.*" of the writers to whom we have alluded.

Many of the statements it contains have been verified by repeated dissections, made in the University of Pennsylvania.

EDITOR.

ART. X. *Essays on Phrenology, or an Inquiry into the Principles and Utility of the System of Drs. Gall and Spurzheim, and into the Objections made against it.* By GEORGE COMBE. *With Notes and Additions, comprehending Memoirs on the Anatomy of the Brain, and on Insanity.* Philadelphia, printed for H. C. Carey and I. Lea, 1822. pp. 463.

WE are not of the number of those who fear, because phrenology has lost somewhat of its conversational interest, that the final establishment of its principles is more doubtful, or the manifold benefits which it brings in its train are less evident. The enthusiasm of the supporters, and the sneering incredulity of its opponents, never fail to impart to every new doctrine in its infancy, a kind of celebrity or notoriety, which can rarely be received as any pledge of its final success, or utility of application. More than twenty years have now elapsed since Dr. Gall began to develop his views respecting the functions of the brain and the faculties of the mind : and during this time we have seen him promulgating his tenets with varied success, in Germany and France, and, by means of his coadjutor Spurzheim, extending them to Britain. Both these gentlemen are now practitioners of medicine in Paris, and lecturers on phrenology : Dr. Gall to a public class, under the auspices of the Commission for Instruction, Dr. Spurzheim to a private one, for a small fee. The crowd to the room of the former is so great, that he is obliged to issue a limited number of tickets of admission. From the latter we learn, that his course was more numerously attended during the last season, than on any former one. The advantages which both present by

unfolding the hitherto mysterious operations of mind, and uniting the anatomy, physiology and pathology of the brain in the same march, are now so evident, that the young Parisians and studious strangers attend their lectures with equal zeal and intensity of interest, as those of Gay Lussac, Thenard, or Orfila. There must assuredly be something more in the science of phrenology, than matter for broad farce, or caricature, when its two principal professors, two Germans—strangers, can take that respectable standing, which we now see them occupy in the literary capital of Europe, where that Areopagus of science, the Institute of France, never fails to summon to its bar all those who lay claims to useful discovery or invention; to test their merits, and to proclaim their reward; or make known its censure. Members of this learned body now publicly avow their belief in the new doctrines, and are most sanguine in the expectation of the beneficial consequences which must attend their diffusion. Gay and satirical, moreover, as are the Parisians, and ever acting on the motto of *rise qui peut*, they have suffered phrenology to be ranged with the sciences, without subjecting it to the tax which is paid every evening in their smaller theatres by pretenders to knowledge, or sentiment, or philosophy. They have laughed at the “Sorrows of Werter,” the rage of Voltaire for the loss of his wig, and have committed to memory entire passages of Molière and other writers, in satire of physicians; but have passed unheeded the admirable subject of skull groping, and confident prognostications at the first glance of a poor wight’s head, whether his hair be cropped *à la Brute*, or, high o’erarching, canopy face and all.

Whatever may have been their previous sentiments, few readers can glance over in the most cursory manner the volume, the title of which we have given at the head of this article, without paying a tribute of respect to the ingenious author, for the calm dispassionate manner in which he treats the subject. The candour with which he states every objection is only equalled by the forcible nature of his replies, which are on many occasions unanswerable. He treats with

courtesy, though he combats most zealously the reasonings of the metaphysicians ; and he shows most conclusively, that the anatomists could not, in this instance, any more than on former occasions, draw any inference respecting function from structure, but must rest content with observing the concomitance between structure and function. We regret that our limits will not allow of an analytical view of the author's reasonings and arguments, chapter by chapter, and we must even content ourselves with indicating the heads, and more prominent outlines.

In the introduction, Mr. Combe informs us that his "first information concerning the system of Drs. Gall and Spurzheim, was derived from No. 49 of the *Edinburgh Review*. Led away by the boldness of that piece of criticism, I regarded the system as contemptibly absurd, and the authors as the most disingenuous of men." Soon after this, however, in 1816, he accepted the invitation of a friend, to attend a private dissection of a recent brain, to be performed by Dr. Spurzheim. The structure of the brain was exhibited to the senses of all present, and contrasted with the bold averments of the Reviewer. The result was a conviction in the minds of all present, and among them were several gentlemen of the medical profession, that the assertions of the Reviewer, in regard to the appearances of the brain, were refuted by the facts presented to their senses. The author next attended the lectures of Dr. Spurzheim, and obtained more serious notions as to the importance of the new science. He then put the system to the test of experience, and though impeded by difficulties at the commencement, from his want of habit of minute observation, he was not long in satisfying himself as to the truth of its general outlines. The course he pursued ought to be imitated by all beginners—

"I resorted," says he, "to the practice of selecting only decided characters as the objects of the earliest observations. I compared the forehead of one individual, who was remarkable for intellectual deficiency, with that of another, who was remarkable for intellectual superiority. The difference was so

great and the correspondence betwixt talent and full development, and betwixt incapacity and imperfect development, so uniform, that it was impossible to mistake the characters, or doubt their connexion with the forms. In the same way with regard to feelings, I compared the heads of persons who were remarkable for cautiousness and timidity with the heads of others remarkable for precipitancy of conduct; and in these cases also the differences were so conspicuous and the concomitance betwixt the sentiment and development so steady, that it was impossible to entertain a doubt upon the subject. The same course was followed with the faculties of benevolence, firmness, self esteem and others, the organs of which are large; and the same irresistible conviction invariably followed.

"Practice in this science, as in every other, gave facility and increased expertness. After some experience in observing, each individual appeared, on the most transient glance, to have a form of head, as peculiarly his own, and as easily distinguishable, as the features of his face. The practice of tracing actions to motives also, gave increased facility in discriminating dispositions and capacities; and human nature was found opening up under the eye by the most fascinating, yet sure and instructive mode of philosophizing that could be devised. In the course of time, therefore, my observations were directed to the smaller organs, and many of them also I have verified, although regarding others I still suspend my belief for want of facts to confirm it."

After explaining the causes which led to the publication of these Essays first in the "*Literary Statistical Magazine for Scotland*," and subsequently in their present form, the author asks—

"How has it happened that these facts, which now appear obvious and indispensable, were so long undiscovered? and, what is the cause of the determined opposition with which the dissemination of a knowledge of them appears to be resisted? The answer to these questions did not at first occur to me, and not indeed till after two of the essays now mentioned had been published. At last, however, some views occurred which appeared to throw light upon the subject.

"Gall and Spurzheim's philosophy may be summed up in two propositions. 1st. That the mind manifests a plurality of innate faculties, meaning by the word faculty a power or instrument of thoughts of a limited nature and specific functions: and 2dly. That each faculty manifests itself by means of distinct organs, and that these organs are different parts of the brain

"The metaphysicians had treated the first proposition with

contempt and derision ; and the anatomists were equally decided in their rejection of the second. I accounted for the opposition of both these parties in the following manner.

“ 1st. Consciousness is single, and, as metaphysicians have studied the philosophy of the mind only by reflecting on the subjects of their own consciousness, it was impossible that they could discover the existence of distinct innate faculties, although such faculties had a real existence. This proposition is proved and illustrated by the fact, that we could never, by mere reflection on the impressions received by means of the five senses, discover that the senses are distinct instruments and that each has specific and limited functions.

“ In the second place, the mind has no consciousness of the existence of the organs by means of which it acts on the external world, and hence the cause why the metaphysicians have made no discoveries in regard to that part of our constitution.”

“ In the third place, it is an indisputable fact, that dissection cannot reveal the functions of the organs of the body ; and yet anatomists have contented themselves with merely dissecting the brain, and contemplating its structure, in order to discover its functions, or, at the most, have made some inconclusive observations with this view in comparative anatomy, and on the effects of mutilations of that organ on the mental faculties. They, therefore, remained, of necessity, ignorant of the fact that different parts of the brain are the organs of different powers of the mind.

“ Gall and Spurzheim, on the other hand, were fortunately but, as they admit, accidentally led into a mode of philosophizing much better adapted than these, to make us acquainted with the true philosophy of the mind, and the functions of the brain. They compared the power of manifesting the mind with the development of the brain, as indicated by the figure of the head, in sane and healthy individuals. They also engaged themselves, with animated industry, in ingenious, and, in some respects, original dissections, to connect their physiology with anatomy, without which it would have been imperfect. Every reader must perceive that they might, by this mode of philosophizing, make discoveries which neither the metaphysicians nor the anatomists could accomplish. It may be true, that the mind manifests a plurality of innate faculties, each distinct in its constitution and functions ; and yet, as consciousness is single, the metaphysicians might not be able to discover this fact by their mode of philosophizing. In like manner, it may be true, that different parts of the brain are the organs of different faculties, and yet the anatomists could not, from dissection, make this discovery. But by comparing the power of manifesting the mind

with the development of the brain, both discoveries might be simultaneously made by the same inquiries."

This view of the subject, at once novel and ingenious, explains to us the grounds of opposition and the reasons of our past ignorance; and is even in advance of that taken by Gall and Spurzheim.

In the first essay, the author treats of *The Principles of the System of Gall and Spurzheim; and of the Objections made against it,* whether metaphysical or anatomical.

"The system of Drs. Gall and Spurzheim is generally conceived to be merely an empirical theory; the utmost utility of which is to enable us to gratify an idle curiosity by guessing at the propensities of others. This is a great mistake. *It is a system of the philosophy of man, embracing the consideration of his moral and intellectual faculties, and the apparent connexion of these faculties with his organic constitution.* It never pretends to enable us to predict actions; but it treats only of powers and capacities in general.

"Gall and Spurzheim make no inquiry into the nature, substance, or essence of the mind itself. Their only object is to ascertain the circumstances under which it manifests its powers: and they do so, by observing facts submitted by the author of nature to the cognizance of our faculties."

The author here proceeds "to give an account of the principles on which their philosophy is founded;" and presents *in extenso* arguments on the positions already quoted: viz.

"Consciousness is single, although there is a plurality of instruments by which the mind manifests itself."—"In the second place, the organs, by means of which the mind acts upon, and by means of which it receives impressions from the external world, perform their functions without any consciousness in the mind either of their existence or their operation."—"We have no consciousness of the existence of the intermedia; and of course no consciousness of the functions performed by each of them. Anatomy could afford us as little light: for we might dissect the olfactory nerves, the optic nerves, the nerves of taste and touch, and the auditory apparatus, till the scalpel fell from our hands with our last breath; and we could find no circumstances, in the structure of these nerves, which would indicate their functions in the living body. How then could the discovery be made? Only by comparing the power of receiving impressions with the condition of the organization."

We regret not being able at this time to follow the author through his section on "the Principles of the System," but hope that all those possessed of any philosophical curiosity will refer to the work itself, and not be satisfied with our extract.

In the second section we find the "Metaphysical Objections considered." Here our author is conscious of his strength, and takes a position from which neither the weapons of sophism or ridicule can dislodge him. After showing that neither in the writings of the ancients nor of Locke is there a single word about innate faculties of the mind, having specific natural functions, and that, though the ideal theories of Berkeley and Hume, and the superstructure raised upon them, fell before Dr. Reid, he is as silent as his predecessors about any innate faculties, or natural constitution belonging to the mind itself; and finally, that Mr. Stewart begins and ends without telling us any thing about the *natural* faculties of the mind, our author continues thus:

"Now, the whole question betwixt Gall and Spurzheim and the metaphysicians is this: Are there such innate faculties possessing specific functions, or are there not? If the metaphysicians say that there are not, then they maintain that the mind manifests but one general power, and hence that each individual has naturally an equal power of feeling in every way, and of forming ideas of every kind; and they deny entirely the existence of limited natural capacities, qualifying men for one mode of action rather than another. If, on the other hand, they admit that such natural faculties do exist, I must observe that, to the best of my knowledge, no account of them is to be found in their writings. I am acquainted with no metaphysical work, which even professes to give an account of the innate faculties and functions of the mind, such as is given of the five senses.

"The system of Gall and Spurzheim, on the other hand, treats of such faculties, and of their apparent connexion with our organization; and their account of them is founded on observation of manifestations, and not on fanciful speculation."

It is next shown that even Stewart himself had no very accurate conception of what a faculty is; and he does not

seem aware that it “ means simply a power or capacity which has innate functions and activity.”

“ The faculties of the metaphysicians are really not specific and distinct powers, having separate functions; but they are mere *affections* or *acts* of a single general power.”

We defy the most prejudiced metaphysician of the old school to read this section without being forcibly struck with the novelty, and, he will own, justness of our author’s train of reasoning.

The third section is devoted to the consideration of the objections of the anatomists, which are met by the counter-authority of the distinguished names of Cullen, Gregory, and Magendie,—cited by our author, who might have added those of every physiologist of any note who ever wrote or taught,—in support of the position, that “ the brain is the material instrument of our mind, and the essential organ of animal life.” Willis, Haller, Blumenbach, Cuvier, Abernethy, Lawrence, and our own Rush, would figure at the head of such an array, and silence all opposition,—the experiments of the Academy of Dijon to the contrary notwithstanding; which said experiments would persuade us of the truth of the reported miracle of St. Denis carrying his head under his arm, and ever and anon kissing it.

The anatomists, opposers of the new system, are arranged by our author against each other; and the only answer he gives to the objection of Dr. Roget, (author of the article *Cranioscopy*, in the *Supplement to the Encyclopædia Britannica*,) that “ The possibility of discovering the size and shape of the different parts of the brain from the external examination of the head, is also discountenanced by anatomy,” is to extract the opinion of the Edinburgh Reviewer, who says, “ But we will acquiesce implicitly, for the present, in the proposition (*familiar to physiologists long before the age of Gall and Spurzheim*,) that there is, in most instances, a general correspondence between the size of the cranium and the quantity of the cerebrum.” Magendie entertains similar sentiments, and the correspondence between the surface of

casts of plaster, using the cranium as a mould, and the external surface of the cranium itself, establishes the fact beyond a doubt.

It is somewhat amusing to observe the dilemma to which the antagonists of phrenology are reduced. One set, as the Edinburgh Reviewer, acknowledges the correspondence between the size of the skull and that of the brain, but denies *in toto* the concomitance "between the vigour of intellect, or the strength or peculiarity of inclination in man, and the size of the brain." Another party, of which an article in one of the late numbers of the Eclectic Review of London may be viewed as a declaration, borne down by the weight of testimony, is forced to acknowledge the coincidence between cranial configuration and mental activity, but denies that this coincidence extends to the brain, between which, we are told, and the cranium, there is no correspondence; and protests moreover against making the brain the seat of particular affections and passions, such as love, hate, jealousy, courage, &c. which have, forsooth, their seats in the heart, liver, spleen, &c. so that the heart, for example, which is the seat of courage in the lion, is the organ of timidity in the sheep. Consistent physiology and philosophy this, from men who rail at Gall and Spurzheim as visionaries; but who, in this instance, can only be compared to the accommodating doctor of Molière, telling his patient, "Whoever says *parenchyma* means both spleen and liver." "Ah, yes: roasted,—boiled,—the same thing."

The fourth section is taken up with a reply to "*Popular Objections*," the two principal of which are, that the system leads to Materialism and Fatalism.

"These objections are entirely popular, and not at all of a philosophical nature; because the philosopher inquires only what is *true*; for he knows well, that if the truth of a fact in nature be ascertained, it is part of the order of creation; and that a knowledge of that order can never lead to any evil result."

In this system no inquiry is made into the *nature* either of the soul or of the body. The phenomena only of the mind are observed. The Great First Cause is understood

in all our speculations as giving life and mind to our bodies, but this does not preclude the study of the circumstances under which the material agents which he chooses to employ are brought into operation. We cannot do better than quote the following passage from the Edinburgh Review, in which all possible ingenuity was shown in finding out the weak points of the system. "It seems hardly necessary," says the writer, "to expose the absurdity of the accusation, that these doctrines tend particularly to materialism, although the dread of such a consequence has been sanctioned by royal edicts. There are two opinions only, which, in respect to this question, stand opposed to each other; namely, that which asserts perception to take place by the intervention of a material organ, and that which asserts it to take place immediately by the energies of the mind itself, or at least without the intervention of the body. The doctrines of Gall, are unquestionably incompatible with this last opinion; that is, with pure immaterialism, which may in fact be regarded as denying the existence of matter altogether. This sceptical spiritualism can be avoided only by the admission of the necessity of a material organ; and if this be admitted, any modification of such opinion that does not exclude the mind as the ultimate percipient must be equally remote from absolute materialism. The immaterialist believes, that it is the soul which sees and the soul which hears, as much as that it is the soul which judges and the soul which imagines; and since he does not condemn as impious the allotment of different organs of sight and hearing, what greater heresy is there in the allotment of different parts of the sensorium, as the organs of judgment and imagination? If, indeed, any one were to say that the affections of these parts are themselves judgment and imagination, he would be a materialist; but he would be as much a materialist if he should say, that the affections of the organs of sight and hearing are themselves the ideas of colour and sound."

In this enlightened age, as we are pleased to term it, every smatterer in history conceives himself at liberty to

indulge in expressions of astonishment and indignation at papal interference in scientific inquiries, and the school boy is no sooner made acquainted with the discoveries of Galileo, than he is also informed of his persecution; but now, when the master magician no longer acts, or that his wand has lost its virtue, we have a pretender starting up in every circle, a mountebank in morality who

Couvrant tous ses defauts d'une sainte apparence,
 Damne tous les humains de sa pleine puissance.

We have a right to expect something more than vague assertion, or an oracular shrug of the shoulders from these ultra-spiritual gentry, who have already so mismanaged their cause as to enlist in their favour only passionate invective, against exact knowledge and cautious induction.

The charge of fatalism is as easily disposed of as that of materialism—

“ This system, no doubt, teaches that various propensities and sentiments are implanted in us by nature; and that some propensities and sentiments are naturally more powerful in one individual than in another; so that one may be disposed to virtuous actions from mere inclination, and another to vicious actions from inclination also. And does not every day's experience confirm these facts? Man does not act from reason alone, he is impelled by *inclination* and *desire*. This system, therefore, teaches only, that the inclinations and desires, which stimulate to action, are implanted by nature, and are not factitious. And, as to the difference of natural endowment in different individuals, are not some individuals found practising virtue, and maintaining virtuous conduct in the midst of a ‘ world lying in wickedness,’ while others are found engulfed in every kind of iniquity, although bred in the sanctuary itself? But it is no part of the system, to teach that strong inclination and necessity are the same thing. It does not teach that actions are irresistible. On the contrary, we have never ceased to repeat that every faculty may be restrained or indulged, in outward manifestations, at the command of the will. The setter dog has a strong inclination to eat the game which he assists in killing, and it is on this propensity that his whole usefulness in hunting is founded; but does not every day's experience prove, that even his propensity can be restrained? Again, although the system teaches, that every faculty being active, must produce

feelings and perceptions conformable to its nature, it does not teach that all faculties are equal in the authority of their dictates."

This is but the doctrine of philosophical necessity, which Crombe and other writers have so ably explained, and shown that it is the only one by which we can rationally abide. The question is simply this—is man actuated in his conduct by motives; or does he act without being able to assign any? If influenced by particular motives, are they the result of inherent feelings and propensities, which give a peculiar tone and colouring to his whole life and character? What though they be shaded by circumstance and education, they are still well marked and readily distinguished from other portraits or groups. If, what will be conceded, we act from motives, the only liberty we can expect is that of choice, and in the plurality of motives man has moral liberty.

"Many well meaning persons," continues our author, "have stated a further objection to the system, that it virtually charges nature with the guilt of man, in respect that it charges her with having implanted the faculties which impel him to action. But of what system may not the same thing be said? There are such acts as thefts, murders, frauds, done by men. From what do these acts proceed? Do they proceed from *reason*, from *corrupted* desires, from any source in the mind itself, or do they proceed directly or *de plano* from the *instigation of the devil*? Let each person choose, but choose he must, to which of these sources he will attribute them. Such actions are manifested, and they must flow from *some source*. If they flow from perverted reason, then nature gave reason; if from corrupted desires, then nature gave desires; if from the instigation of the devil, then nature made us liable to be thus instigated."

The same persons who declaim with bitterness against the system of fatalism, as they term it, which makes men born with innate propensities to particular modes of action, say nothing of the acknowledged facts, of every day's observation, of men being born with a predisposition to certain diseases of the body, as gout, consumption, epilepsy, &c. and of the mind, as melancholy, madness, &c.; or of other poor helpless creatures, who, idiotic from birth, are incapa-

ble of distinguishing right from wrong, and are little better than automaton in the great drama of the world. Now what is the language of the Apostle, the observing philosopher, and the moralist; that man is prone to evil: that "he is but concealment, falsehood and hypocrisy, both in regard to himself and to others. He will not bear to be told the truth, he avoids telling it to others; and all these dispositions, so foreign to justice and reason, have a natural root in his heart."* On what are the arguments in favour of revelation founded, but the fallen degraded state of man. But at the same time that we admit the existence of propensities, which, if not timely checked, would bear us on to evil, we must also suppose the presence of kindlier sentiments, to be operated on by the lights of revelation, otherwise for them to influence us there must be a perpetual miracle. We find such sentiments or affections demonstrated in the new doctrine: *adhesiveness*, or propensity to form friendships; *benevolence*, or disposition to love and aid our fellow men; *veneration*, or disposition to adore a high and supreme power; *justice*, or a disposition to award to each his due. These faculties, however, (we are now anticipating our subject,) do not perform specific ideas, but produce merely a *sentiment*, that is a propensity joined with an emotion or manner of feeling of a specific kind. The formation of ideas is by the *knowing* and *reflecting faculties*, which are more peculiarly destined to direct our intercourse with the external world, and to give us the control over animals and matter.

We find now that phrenology is in accordance with sacred writ in acknowledging man's depravity: it furnishes some foundation to natural religion, by admitting *sentiments*, or susceptibilities to good: it enforces the necessity of revelation, by showing that the intellectual faculties alone do not give a knowledge of a Creator or Redeemer; and explains why the sentiments above mentioned, are faculties producing only a manner of feeling in general, and do not form ideas, but are capable of becoming recipients for divine truth.

* Pascal Pensées.

Observation soon displays to us the different constitutions of men, in respect to these sentiments and their corresponding organs, illustrating thereby the parable of the divine teacher, that the seeds of religion scattered freely abroad, fall on soils of a very different nature. Thus, alike remote from predestination and universalism, phrenology exhibits man—"sufficient to have stood, though free to fall," and once fallen, still to have the remains of former excellence, to enable him to receive and relish the redeeming word.

We shall close our remarks on this part of the subject by quoting what Condillac has said in the second part of his "Logic," at the conclusion of the sixth chapter. "The faculties and wants of man being given, the laws are given themselves; and though we make them, yet God, who created us with such wants and such faculties, is, in truth, our sole legislator. When, therefore, we follow these laws which are conformable to our nature it is Him we obey, and this accomplishes the morality of actions."

"If from man's being free, we judge that what he does is often arbitrary, the consequence will be just; but if we judge that all he does is arbitrary, we shall mistake. As it does not depend on us not to have the wants which are a consequence of our conformation, it does not depend on us not to be inclined to do what we are determined by those wants, and if we do not do it, we shall be punished for it."

In the second essay of the work before us, the author treats of "the faculties of the mind, and the organs by means of which they manifest themselves." The first section of this essay is taken up with the consideration of the "functions of the five external senses;" and opens with a notice of the erroneous opinions of some philosophers, that man owes his arts to the structure of his hands:

"Monkeys have hands almost as nicely formed as those which are attached to the human arm; but do monkeys put wood upon the fire to support combustion? Or do they construct works of art?"

"In point of fact, however, the external instruments are often similar, while the functions performed by them are quite different. The hare and rabbit have similar feet; yet the hare lies

on the surface of the fields, while the rabbit burrows under ground."

"Other philosophers again, have taught, that the functions of the senses are not ordained by nature but acquired by experience. For example, the metaphysicians have written much about the *rectification* of the senses of sight by means of touch; and about what they call the *acquired perceptions* of sight. According to Dr. Spurzheim, however, each sense performs its functions in consequence of its own innate constitution alone, and the relations of every sense to external impressions are determinate and subjected to positive laws. If an odour make an impression upon the olfactory nerve, the impression is immediately found to be agreeable or disagreeable; and thus feeling arises from the constitution of the sense, and the relation established betwixt it and the odorous particles which excite it to activity. The functions of every sense depend only on its peculiar organization: and hence no preceding exertion or habit is necessary to acquire the special power of any sense."

"Touch may show, that a rod which is plunged in water and looks crooked is straight; but the eyes will see it crooked as before."

It is difficult, as our author justly remarks, "to point out accurately the precise limits of the function of the senses." The senses do not, we know, *form ideas*, they are but the medium of communication betwixt the internal faculty and the object making the impression, but "as the senses are constituted with a determinate relation to external objects, so the internal faculties are constituted with a determinate relation to the organs of sense. In virtue of the first relation, a certain object makes a certain impression; and, in virtue of the second, a certain impression gives rise to a certain perception; and both depend on nature, and not on the will, nor on exercise or habit."

We are required to distinguish betwixt the perceptions we experience of external objects and the inferences concerning their qualities which we draw from these perceptions. "All those ideas which are pure conceptions are formed intuitively, on the presentation of objects fitted to excite them. Inferences from these perceptions, on the other hand, are the result of our reasoning powers."

It has been observed by Dr. Spurzheim on this head,

"That where the *same ideas* are acquired by the instrumen-

talities of *two* or more senses, the ideas cannot possibly be formed by *the senses*, because nature, so far as man has discovered, never endows instruments with the *same functions*, in the same individual. For example, we can acquire ideas of form by the instrumentality of the sense of sight and likewise by means of touch. Now from this circumstance alone it is evident that the conception of figure is formed not by the eyes, or by the means of feeling, because this would be an instance of two separate senses performing the same functions, but by an internal faculty which perceives figure in consequence of impressions made on either of these two different senses."

"The organs of each sense are double; and yet the consciousness of all impressions experienced by the mind is single.—No satisfactory explanation of this fact has yet been given.

"The mind has no consciousness either of the existence of the organs of sense, or of the functions performed by them." And this is a wise ordination, for "we should have been distracted, not benefited, by a consciousness of their internal action when they perform their functions. It is when they become diseased that we become conscious of their actions, and then the consciousness is painful."

Our author then proceeds to state the specific functions of each sense in particular.

In section second, he treats "*of the internal faculties of the mind, and of the organs by means of which they manifest themselves.*"

"We have already mentioned (says he,) the principles upon which this system is founded. It is founded on observation of facts." And on these grounds we are forced "to admit as many faculties therefore as we find differences in the natural capacities of men to experience different kinds of feeling and to form different classes of ideas."

"Dr. Spurzheim considers man by himself, and also compares him with other animals. When he finds the animals manifesting the same feelings and propensities as those manifested by man, he conceives the faculties which produce these feelings and propensities to be common to both. In order to determine what faculties are primitive, he proceeds according to the following rules. He admits such a faculty as primitive, only as he finds, as follows:

"1. To exist in one kind of animals and not in another:

"2. Which varies in the two sexes in the same species:

"3. Which is not proportionate to the other faculties of the same individuals:

"4. Which does not manifest itself simultaneously with the other faculties; that is, which appears or disappears earlier or later in life than other faculties:

"5. Which may act or rest singly:

"6. Which is propagated in a distinct manner from parents to children: And,

"7. Which may singly preserve its proper state of health or disease.

"After ascertaining, according to these rules, a faculty to be innate or primitive, the next point was to ascertain its functions. He accomplished this end by the following mode of proceeding. When he had ascertained a faculty to be innate, he observed the actions of a number of individuals in all of whom it was manifested powerfully. Whatever acts all of these individuals could do with superior facility and excellence, indicated the sphere of the functions of the special faculty which each of them possessed in an eminent degree. For example: He observed the actions of a number of persons who manifested a strong faculty for music, and found a peculiarly eminent power of perceiving melody common to them all, while in all their other powers, propensities, and sentiments, they differed extremely. One, for example, was capable of reasoning well, another not. One was prone to sensual love, another was not. One was vividly alive to the sentiments of benevolence, another was not. All which facts, he conceived, indicated that the faculty of music was separate and distinct from the faculties of reasoning, of sensual love, of benevolence; and that the perceiving of melody was the special function of that faculty, since all the individuals possessing it, resembled each other in being eminent musicians, although their characters corresponded in nothing else. In this way he ascertained the functions of every faculty, or the special desires and powers of feeling, perceiving, or acting which it conferred; so that on knowing what faculties any individual possesses most powerfully, we are able to tell to what kind of feelings, perceptions, and actions, he is naturally most disposed.

"And besides, he investigated, in regard to each faculty, what effect the size and activity, health and disease of the organs produced upon the power of manifesting it.

"On these principles, Gall and Spurzheim had discriminated thirty-three primitive or innate faculties of the mind, and have pointed out the functions of each, and the effect which the state of the organs has upon the power of manifesting it. In the case of many of the faculties, their observations have been so numerous that they hold their conclusions as *certain*. In regard to others, where the observations have been fewer, they state their conclusions as *probable*; and, in every case where reason-

able evidence is wanting, they state them as *conjectural*. Conjectural, however, must be distinguished from *imaginary*. They have stated a faculty as probable and conjectural, only in consequence of having found *actions* which could not be referred to any of the other ascertained faculties as their fountain; and which, of course, must have proceeded from some undetermined faculty, the special functions of which were not ascertained, for want of a sufficient number of observations."

We leave it to the reflecting reader to say, whether this mode of philosophizing does not partake more of inductive reasoning, and is not more conformable to human nature, than the common metaphysical theories of the schools, in which faculties are assumed to exist, with as little foundation, in fact, as were the elements of the older chemists.

"Dr. Spurzheim divides the faculties into two orders: *feelings* and *intellect*. The feelings are subdivided into two genera; *propensities* and *sentiments*. The second order, consisting of intellectual faculties, is subdivided also into two genera, *knowing faculties* and *reflecting faculties*."

The *propensities* or faculties of the first genus are common to man and animals. The *sentiments* are some of them common to man and animals: others are peculiar to man. Some of the *knowing* faculties are possessed by animals in a limited degree, but to man alone is given the *reflecting faculties*.

We are tempted on this occasion to give the language of Abernethy, in his lecture to the Royal College of Surgeons, and with him say, "I see no objection to the classification of the superior intellectual faculties, which Gall and Spurzheim have made, into comparison, analysis, causation, and combination, because this arrangement refers to all the elementary powers cognizable in the actions of the human mind: powers which seem exclusively to belong to man. I am even pleased with the station which the organs supposed to be productive of these powers are said to occupy, for we find them arranged in a regular phalanx on a part of the head peculiar to man, the summit of the lofty forehead. As I have said in the lectures addressed to this college, if we find the head more produced in parts peculiar to man, it is

reasonable to suppose that he will possess more of those propensities in which he participates with the brute creation. We are all naturally physiognomists, and almost every observant person has remarked the amplitude of this part of the head to be indicative of intellectual power. Shakspeare denotes the eye as the herald of the mind, which so quickly proclaims its mandates, that he compares it to the "winged Mercury, new lighted on a fair and ample hill, so lofty, that, Olympus-like, it seemed to touch the heavens."

We cannot forbear quoting another passage from the address of this experienced surgeon and able writer. "The foregoing representation of human nature when viewed in its proper light, and with due attention, must, I think, please every one; for it is not like others heretofore presented to us, which appear in comparison, but as mere diagrams, the result of study and imagination; whilst this seems like a portrait from life by masterly hands—it is not, indeed, exactly like any individual, but capable, by observations, of being made to resemble every one; so that by the help of a few touches, we are able readily to show 'virtue her own image, vice her own deformity,' in all their diversities.

"I had great satisfaction in being intimate with Dr. Spurzheim, whilst he remained in London, and in a kind of badi-nage I proposed to him questions, which he answered with facility, and in a manner that showed a very perfect knowledge of human nature. For instance, I inquired whether he had discovered any organ of common sense? and he replied in the negative. I then demanded in what that quality consisted? and he answered, in the balance of power between other organs. This answer shows why a quality so peculiarly useful is common to all, and rare in any: for there are but few who have not prejudices or partialities, hopes or fears, or predominant feelings, which prevent them from pursuing that middle and equal course of thought and conduct, which unbiassed consideration or common sense, indicates and directs. I inquired of Dr. Spurzheim, if there was any organ of self control, or if not, whence that power originated? He said, "it is the result of a predominating

motive, thus, justice may control avarice, and avarice sensuality.' In short, I readily acknowledge my inability to offer any rational objection to Gall and Spurzheim's system of phrenology, as affording a satisfactory explanation of the motives of human actions."

This is not the language of a youthful enthusiast, captivated with novelty, and heedless of the consequences of its adoption, but of one whose caution in adopting, or rather perseverance in rejecting, some of the material physiology of the day, has subjected him to the charge of prejudice and intolerance.

Section third of the second essay of the work before us, is taken up with a consideration "of the modes of activity of the faculties," which is instructive and amusing, both to the phrenologist and the general reader. We learn (as before explained,) that the faculties of the propensities and sentiments do not form ideas, but have the attributes of sensation alone, that is to say, when they are active, a sensation or emotion is experienced.

"Hence, sensation is an accompaniment of the activity of all the faculties which feel, and of the nervous system in general, but sensation is no faculty of itself;" contrary to what is taught by Condillac, who refers all the operations of the mind to sensation. It is also shown that *perception*, *memory*, and *conception* or *imagination*, are not distinct faculties, but different degrees of the activity of the knowing and reflecting faculties. *Judgment* belongs to the reflecting faculties alone, that is, viewing it in the proper sense of the word, as "a perception of relation or of fitness, or of the connexions between means and ends."

"*Attention* is not a faculty of the mind, but merely consists in a vivid application of the faculties, which form ideas. Unless a faculty be possessed, the objects which it takes cognizance cannot be attended to by an effect of the will."

"*Consciousness* means the knowledge which the mind has of its own operations, but of course, it is not a separate faculty. Consciousness gives us no intimation of the distinct existence and separate functions of the faculties, and does not perceive the existence of the organs. It reveals only the kind of feelings and the kind of ideas which the faculties form, and it aids us in discovering their laws."

"*Pleasure* and *pain* are affections of every faculty. Every faculty when indulged in its natural action, feels pleasure;

when disagreeably affected, feels pain ; consequently, the kinds of pain and pleasure are as numerous as the faculties."

"*Passion* is the highest degree of activity of any faculty, and the passions are as different as the faculties. Thus, a passion for glory, is the result of a high activity of the faculty, which produces the *love of approbation*. A passion for money is the result of a high activity of *covetiveness*."

"*Association* is not a faculty itself ; it expresses the mutual influence of the faculties. The metaphysicians, not keeping sufficiently in view the distinction betwixt the mind and the ideas which it forms, have overlooked the *association of faculties*, while they have written volumes on the association of ideas."

We regret not being able to present in a greater detail, our author's remarks on the interesting subject of association of faculties, which will doubtless be taken up hereafter, and illustrated in the same manner as the ingenious author of the *Zoonomia* has done in respect to the corporeal organs and their functions.

Section fourth is on the "*modifications of the manifestations of every faculty*," and commences thus:—

"It is of importance, in the next place, for those who mean to study the system philosophically, to attend to the mutual influence of the faculties. The manifestations which any faculty produces, will always partake of its specific character, but they will be considerably modified by the other faculties, with which it may happen to be combined in the same individual. For instance, a powerful faculty of covetiveness, (acquisitiveness,) combined with a weak faculty of conscientiousness, may produce theft, while the same faculty of covetiveness joined with a powerful faculty of conscientiousness, would produce keen efforts to acquire property, but directed according to the dictates of justice," and so on with the other faculties.

Every person must, from personal experience, acknowledge both the plurality of faculties and the modifications of their manifestations, when he feels himself strongly operated on by contending emotions : the wish to gratify a particular propensity impelling him to one mode of action ; the higher sentiments and the intellectual faculties presenting countervailing rules of conduct : and this philosophy goes farther in explaining actions, and the play of contradictory motives in human life, and those inconsistencies of conduct in which the just are sometimes led as well as the

unjust, than the imaginary powers of desire, aversion, pleasure and pain of the schools ; or the influence of a cloudy atmosphere, or the predominance of a particular wind.

Section fifth is on pathognomy or natural language, of itself an extremely interesting topic, and one which might furnish matter for a series of essays not less to the advantage of the philosopher than the orator, the actor, and the artist. It has been found that the energy of the expression of this natural language, is in proportion to the activity of the particular faculties.

In section sixth, on "*moral liberty*," are sketched the general principles which show the nature of Spurzheim's data and conclusions, and that, "he approaches very near the general principles of Dr. Hutcheson, and those of Bishop Butler, in his *Analogy of Natural and Revealed Religion*."

Section seventh contains a number of facts, strikingly illustrative of the system, and calculated to arrest the attention of the incredulous, and induce them to examine for themselves, in place of retailing the same again and again refuted objections, or throwing the arrows of ridicule, which whatever point they may have had originally, are now worn down and rebound unfelt and unheeded.

In the third essay, the author enters into an inquiry "on the utility of the system," which cannot be more forcibly brought home to our feelings and interest, than by saying that,—

"It is a system of the philosophy of man, and treats of the innate powers of feeling and thinking, conferred upon him by nature, and in which education and external circumstance are destined to act. It unfolds to us also, many interesting views regarding the apparent connexion between the immaterial principle of the mind, and our organic constitution ; a connexion, the influence of which we feel every day of our lives, but the philosophy of which has hitherto been enveloped in the deepest mystery."

"No study appears more fascinating, and at the same time of higher importance, than that of human nature. When we see unfolded to us the nature of man, as he comes from the hands of the Creator—when we see what his innate propensities to action, and his innate powers of thinking are, then we shall be able to tell how far the actual character of individuals

and of nations, is to be attributed to circumstances, over which we possess control, and how much is unalterably fixed by the fiat of nature's God."

To educate man with a view to the promotion of his own happiness and of the social welfare ; to cultivate his moral and intellectual powers ; to watch the particular bias of each faculty, repressing the inordinate action of the *propensities* by an assiduous cultivation of the good *sentiments*, can only be accomplished by a previous and intimate knowledge of the nature and function of each faculty of the mind ; a knowledge which phrenology professes to impart more lucidly and practically than any previous system of philosophy. In this point of view we may confidently urge an attention to the subject on all parents, guardians and pastors, who will find in it means powerfully calculated to operate on the mind, and deduce from it rules admirably adapted to the guidance, of their respective charges, thereby enabling them in the end to give a good account of their stewardship.

To ameliorate the condition of mankind, to extend with effect the hand of charity, to relieve their sufferings, and to render efficient the lessons of philanthropy in free schools and liberal political institutions, we must know their nature—some general standard by which to judge of their advancement in happiness, or of their perfectibility. Why are the reproofs of criticism so often unheeded—so partial in their application, but from the want of general principles to guide them. They are the expression of individual opinions, rather than the accumulated testimony of the world at large. The light of truth may occasionally flash in them, but it is not transmitted to us through the prism of nature, to enable us to see the effect of each primitive colour of the mind, before our sight is bewildered by the innumerable combinations of shades of feeling and thought.

From the same ignorance is legislation so imperfect. Prejudice and wrong education in the legislator have often imposed the tyranny of customs and laws on a whole people, and retarded their advancement in knowledge and happiness for centuries. He has given the transcript of his

own mind, in place of that of the nation. In Christianity we have sublime moral truths, blended with a practical code of laws, applicable to all ages and nations; affording thereby of itself a sufficient proof of its divine origin. The laws of a Solon, a Lycurgus, and a Numa, were partial in their operation and necessarily temporary in their duration. Those of modern legislators are humane and efficient in proportion as they have followed the inspired lessons of Christianity, which we are proud to declare receives confirmation and support from the doctrines of Phrenology. We do not heedlessly hazard this assertion, which is made after a patient and attentive study of the subject, now that the charm of novelty has ceased to dazzle our imagination and bias our judgment.

We have in part anticipated the subject of the first section of this last essay in which our author treats on education. We have here to consider,

“In the first place, on what the power of manifesting the faculties depends? In the second place, what order the faculties follow in the course of their successive development? Thirdly, What are the best means for accomplishing the modifications we may have in view? And, lastly, How far our power of modification extends.”

A few quotations would do so little justice to our author's reasoning, that we must refrain from giving any, and refer our readers to the work itself. Those who may be prompted by curiosity or interest to obtain fuller information on this very interesting subject, will be highly gratified by a perusal of Spurzheim's more recent work, entitled; “A View of the Elementary Principles of Education founded on the Study of the Nature of Man.”

In section second—“On Genius,” which closes the original work, we have very pleasing and, in many respects, very pertinent remarks. In reply to the opinions of some philosophers, who refer all the efforts of genius to fortunate accidents; to the acuteness of the powers of perception and the retentiveness of memory; or to habits of association—the author holds the following language.

"According to Mr. Stewart, the reason why we are not all Shakspeares, Byrons, Maturins, Campbells, Mozarts, Newtons, or Davies, is because we have not all acquired 'the habits of association' and the habits 'of study or of business' which 'formed the genius' of these celebrated individuals, for poetry and music, philosophy and chemical discovery. But let me ask the metaphysicians, *why* we do not all form these habits? and *how* it has happened that these individuals acquired them?"

"If genius depends on habits of association, and on habit of study or business, *on what does the power of forming these habits depend?* This is the question which is next of importance for us to solve. We ought never to suppose that we are in possession of ultimate knowledge before we have attained it. Every one has heard of the philosophy which teaches that Atlas supports the globe. Then what supports Atlas? The system does not tell. In like manner, habits form genius. What gives the power of forming habits? The metaphysicians do not tell. If all men have an equal natural power of forming habits, then it is absurd to talk of *differences in natural genius*. If all men have not equal natural power of forming habits, then it is of no use to tell us that habits form genius, unless we are told on what circumstances the power of forming habits depends. No hypothesis can be more unphilosophical than that which attributes the formation of genius to habits, for habit is merely a facility of doing a thing, acquired by the practice of doing it. But before we begin to act, we must have had the *power* or *capacity* implied in the act itself."

We have not as yet noticed the contributions of the American editor to the original work: they amount to nearly an hundred and fifty pages. The light in which his additions will be viewed depends on the estimate which may be formed of the importance of the subject generally. This much we are confident of, that so little did the vanity of authorship enter into his views, that he would have been well satisfied with introducing the present improved edition to the public without affixing his name to it, had he not been apprehensive, that such an omission would have been construed by many into a desire to shrink from a responsibility, which he is never ashamed to avow, for his instrumentality in giving currency to doctrines, of the truth and utility of which he believes there is the fullest evidence.

The preliminary essay of the editor first appeared in a former number of this Journal, and may be remembered

as a rapid view of the proofs for, and objections against phrenology, with allusions to its beneficial consequences. The next article is an account of the anatomy of the brain, as displayed by Gall and Spurzheim; calculated to interest more peculiarly the medical reader and anatomist, as affording the only natural method of demonstrating the structure with a view to understanding the physiological and pathological state of this very important organ. Almost all the English writers and reviewers who have noticed the doctrines of Gall and Spurzheim, have either been silent on their anatomical discoveries, or have given most imperfect or partial accounts of them. The present memoir is calculated to supply the desideratum in this respect, and to enable every person to examine for himself. Plates are given, in which is exhibited the separation of the duplicatures of the convolutions of the brain. From his not wishing to add to the controversial nature of the memoir, the editor has omitted noticing the more recent observations of Tiedmann on the brain, in which some of the positions of Gall and Spurzheim are contested, if not refuted. The concluding article on Insanity, is intended to exhibit the application of phrenology to mental derangements, in reference to their causes and treatment; and as a subject interesting to the medical practitioner, the lawyer and the philosopher, will, we presume, be not unacceptable on the present occasion.

BIOGRAPHY.

ART. XI. *Biographical Memoir of the late Dr. JAMES SYKES.*

IT was the opinion of Dr. Johnson that no species of writing was more worthy of cultivation than Biography, which, from its diversity, is capable of diffusing useful instruction in a pleasing manner to people of every condition. Perhaps no other profession is more rich in this department of literature than the medical; and in none is its utility more obvious, as without examples of such as have acquired honours and distinction, the physician is in danger of falling a prey to sordid propensities, or sinking into obscurity under the burthen of his toils. The narratives of individuals who have excelled in their stations, not only excite a laudable emulation in the young, but convey to those whose labours are drawing to a close, the consoling reflection that their own merit may not be forgotten, and that their fame will outlive their days.

Prompted by a sense of duty arising from the preceding reflections, and still more strongly impelled by the most grateful recollections, we venture with diffidence to sketch the outlines of a life, which, if properly filled up, would inspire honour by its traits of usefulness, and reverence by its dignity.

Doctor James Sykes, the object of this notice, was a native of Dover, in the state of Delaware. He was born in the year 1761, and was the eldest of several children. He received his father's name, and has left a reputation which, whilst it reflects additional honour upon his respectable parentage, sheds a lustre over his profession. He was naturally endowed with a commanding figure, which of itself was sufficient to inspire respect and confidence, where his abilities were unknown. In him was associated, with a mind

comprehensive, ardent, and aspiring, a constitution which was vigorous, and fitted for the most active duties.

With these qualifications, assisted by the best education afforded by the schools of the time, he directed his attention to the study of medicine, and became the pupil of Dr. Clayton, an eminent physician, who resided on the borders of Delaware and Maryland. At that period the votaries of the healing art had to contend with many obstacles now unknown, for as yet medicine was in its infancy on this side of the Atlantic, and scarcely a medical school organized. The student was then compelled to trust very much to his own genius, guided by a few foreign text-books. Dr. Sykes availed himself of the advantages afforded by the medical lectures delivered in Philadelphia, where Professors Shippen, Morgan, Kuhn, and Rush, were then laying the foundation upon which the proudest fabric of Pennsylvania now stands. But with all these difficulties to impede his progress, Dr. Sykes had scarcely commenced his professional career before he became distinguished. Cambridge, on the eastern shore of Maryland, was the scene of his first labours. It was here he became acquainted with Miss Elizabeth, daughter of Robert Goldsborough, Esq. whom he married, and who still survives to deplore her loss. After a residence of only two or three years in Maryland, he returned with a family to the place of his nativity, where his services and society will be long remembered.

With a mind bold and decisive, he possessed the nerve and skill which qualified him in so eminent a degree for surgery. To these essential attributes of the operator, he united that intimate knowledge of the human structure, which alone, in the impressive language of Professor Physics, can give fortitude to the mind and steadiness to the hand in the hour of trial. Such talents often require for their successful display, the encouragement and opportunities afforded by large cities, for genius is seldom appreciated in the obscurity of a country life. But happily this was not the case in the present instance. Opportunities for signaling himself did occur to Dr. Sykes, who availed himself of

them in such a manner as to establish the confidence he had been so fortunate as to inspire. His sphere of usefulness spread itself rapidly, and became at length so extensive that his name was familiarly known over the peninsula, and his services frequently demanded in the neighbouring States. By no one was his professional talents better known or more highly respected than by his late friend Dr. James Tilton, who did not hesitate to say, that in the operation for lithotomy he was without an equal.

But Dr. Sykes was not conspicuous in a professional view only; possessing, in a high degree, the confidence of the public, he was often chosen to fill the most honourable stations in his native State. Without enumerating other distinguished capacities in which he served, it may be sufficient to mention that he was once Governor of that State, and for many years presided in the Senate. His intimacy with Bayard, Rodney, and other eminent political leaders, not only afforded him congenial society, but produced a reciprocal influence highly advantageous to all. We here think it our duty to remark, that much danger may accrue to our profession by the influence of an example displaying a union of the rare capacities of physician and statesman. Medicine, always watchful of her votaries, seldom permits them to stray from her paths, or to accept the shining allurements so often within their reach. The physician is not so far limited in his views as to prevent him from rendering himself highly useful and ornamental in society, but the ambition of acquiring public honours is often the grave of his professional celebrity.

To one who has spent the vigour of his days in the exercise of an arduous profession, and the discharge of various other important duties, the anticipation of passing the decline of life with more calmness and tranquillity must afford a pleasing prospect. As yet the zeal and activity of Dr. Sykes had been constantly employed in the discharge of very numerous engagements. With a mind replete with the fruits of study and experience, and the most ardent wishes for the promotion of science, it is greatly to be re-

gretted that he had not the leisure to make himself known as an author. "Yet," as it has been well observed in eulogizing another eminent physician, "such persons may do much for the promotion of literature."*

Sensible of the difficulty of retiring from his extensive practice, which subjected him to a degree of personal fatigue and exposure unknown to a physician who has spent his life in a large town, and anxious to lessen the burden of his cares, Dr. Sykes resolved, a few years before his death, on removing with his family to the city of New York. But though eminently qualified to figure in a metropolis, his former pursuits and connexions were too firmly rooted in his nature to admit of such an entire change at so late a period. This voluntary exile, for such he felt it, from his native State, became at last so insupportable, that, yielding to his strong attachments, he returned to his former abode, after an absence of about five years, and was received by his numerous friends with the most heartfelt greetings. Here he resumed his practice, being now assisted by his eldest son, whom he associated with him. That his mind had lost none of its vigour was soon evinced by the happy effects of his prescriptions; and a successful operation for lithotomy, with other important cases, proved his skill in surgery unimpaired. Upon the death of Dr. James Tilton, the Medical Society of Delaware lost its President, and Dr. Sykes was chosen to fill the vacancy left by his distinguished predecessor. But his death, which happened in September, 1822, obliged him in turn to resign this and all other earthly honours.

As a social character, Dr. Sykes was almost unrivalled, and will be always remembered with the highest esteem by those who had the happiness to know him. The dignity of his deportment, and the urbanity of his manners, qualified him pre-eminently for shining in society, whilst the generosity of his sentiments, hospitality, and many other estimable virtues, made him universally beloved. One of his distinguishing traits evinces so much good feeling, that it

* Tilghman's Eulogium on Dr. Wistar.

deserves to be particularly commemorated. He was the friend and patron of youth, and it always gave him pleasure when he could avail himself of his influence in promoting their prosperity. The value of such friendly services will be best appreciated by those who can revert, with grateful feelings, to the time when they stood in need of them. But if his many amiable and benevolent qualities endeared him so much to his friends, how shall we describe the full strength of his domestic ties? The force of these will perhaps be best displayed by the simple recital of a distressing event. His only daughter, an amiable and accomplished young lady, who had just entered the gay and pleasing season of womanhood, was absent from home when her father died, and only returned in time to behold his remains, before they received their last solemn rites. At the sight of the cold and lifeless clay, she sunk to the earth, overpowered by a sense of desolation, and was carried to her bed, from which she rose no more; for a mortal blight had fallen upon her spirits, and withered the vital flower. Refusing both consolation and sustenance, she pined away, and in a few days followed her beloved parent to that grave, which was at once the source and termination of her sorrows—a melancholy instance of the force of filial affection, and the exquisite sensibility of the human heart.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

ANATOMY AND PHYSIOLOGY.

Case of extensive Solution of the Stomach by the Gastric Fluid after Death.—Dr. Haviland, Regius Professor of Physic in the University of Cambridge, has detailed a case of this kind; the subject of which was a young man, of about twenty years of age, who died of fever, but had previously enjoyed good health. The body was opened twelve hours after death, and the stomach, on being examined after its removal from the body, presented the following appearances:—The mucous membrane seemed more red and vascular than usual throughout its whole extent, and here and there were small spots of what seemed to be extravasated blood, lying beneath the mucous coat, as they could not be washed off, nor removed by the edge of the scalpel. There were two holes in the stomach; the larger very near to the cardiac end of the small curvature, and on the posterior surface; this was more than an inch in length, and about half an inch in breadth. The other, not far from the former, and likewise upon the posterior surface, was about the size of a sixpence. The edges of these holes were smooth, well defined, and slightly elevated. The coats of the stomach were thin in many other spots, and in one part nothing was left but the peritoneum, the mucous and muscular coats being entirely destroyed. There was a hole in the diaphragm through the muscular portion, where it is of considerable thickness, large enough to admit the end of the finger. There was no appearance of ulceration or of pus adhering to the edges of this perforation of the diaphragm. Dr. Haviland concludes with stating the reasons which induce him to believe, that, owing to the activity of the solvent power of the gastric juice, it sometimes not only corrodes the parietes of the stomach, but even the thick muscle of the diaphragm, and that within the space of twelve hours after death, as was exemplified in this case.—*Transactions of the Cambridge Philosophical Society, Vol. I. Part II. 1822.*

Hardening of the Brain.—Pinel (the son,) lately read to the Institute a memoir on Hardening of the Brain. He relates

four cases of epilepsy, palsy, and idiocy, in which he has found this organic lesion: in all these it had its seat in the medullary substance, never extending to the cineritious; its appearance is that of a fibrous substance, resembling in many cases hardened albumen.

SURGERY.

Description of an Apparatus for Removing Poisons from the Stomach, invented by Mr. Jukes, Surgeon.—We might with justice be considered to be forgetful of the duty we owe the profession, were we to fail in laying before them a description of a very excellent apparatus which Mr. Jukes, its very ingenious inventor, favoured us with a sight of. It consists of an elastic gum tube, a quarter of an inch in diameter, and two feet and a half in length, terminating at one extremity in a small globe of ivory, with several perforations; the other extremity is adapted, either by screw or by plug (the latter is preferable) to an elastic bottle of sufficient size to contain at least a quart of liquid, and having a stop-cock fitted to it, in a similar manner as in the hydrocele bottle. Instead of the bottle, a pewter syringe, of an equal capacity, may be adapted, in the same manner, to the flexible tube. The operation by the syringe is performed more quickly, and may therefore, perhaps, be preferred by some. In cases where surgeons have neither bottle nor syringe, the tube alone might be made to answer the purpose, if the operator apply his mouth to its extremity, and thereby institute the office of a siphon.

Application.—The patient ought to be placed on the left side, and the globulated end of the tube be then carefully passed to the greater curvature of the stomach, either through the mouth or nostril, as may be thought proper. Having previously filled the bottle or syringe with warm water, at the temperatue of 150°, screw or plug it to the tube, turn the stop-cock, and gently force the contents into the stomach. The then diluted contents are to be immediately withdrawn by pulling up the piston; or, if the bottle be applied, the same effect will ensue from its elasticity enabling it to recover its original form, by which the fluid contents will return, charged with the poison. This operation ought to be repeated, till the water, which is withdrawn, becomes clear and tasteless.

In Mr. Jukes's experiments, first on dogs, and then on himself and others, assisted by Mr. James Scott, surgeon, in Westminster, the apparatus was proved fully to answer the intended purpose. In these experiments, Mr. Jukes swallowed, first, *two drachms* of laudanum; he afterwards gradually increased the quantity, until it reached ten drachms: since which, he has ad-

ministered to several individuals (one of them a female) one ounce of laudanum, with an equally successful result. The utility of so well contrived an instrument, arising especially from its being equally adapted to the removal of all the more bulky poisons, must be evident to every one. We consider that Mr. Jukes has rendered an essential service to the profession, and to the community, by its invention.*—*Lond. Med. Reposit.*

Effects of drinking Boiling Water.—It is the custom of some poor and thoughtless persons to suffer children to drink from the spout of a tea-kettle while filling it at the pump; they have afterwards attempted to drink when it has just been taken from the fire, supposing it still to contain cold water. No less than four cases of this kind are related in the *Medico-Chirurgical Transactions*, by Dr. Hall. The symptoms produced are those of *croup*, that is, of inflammation of the glottis and larynx, and not, as might have been expected, of the œsophagus and stomach. It appears, indeed, probable, that the boiling water does not actually reach the stomach, but that it is arrested by spasm of the pharynx. Dr. Hall recommends an incision into the wind-pipe, but the only case of this operation which he relates, proved, as might have been expected, fatal. Where the injury is extensive, there seems to be no remedy.—*Brande's Journal of Science*, No. 27.

Case of extraordinarily large Sarcomatous Tumours.—M. Dagorn, of Morlaix, has described an extraordinary case of sarcomatous tumours arising from the trunk, the largest of which weighed forty-six pounds. The patient was a female, aged eighteen years and a half. No cause could be assigned. The largest of these tumours, which covered nearly the whole of her body, made its appearance in 1820, unattended with pain: the seven others appeared successively until 1817. The patient had been attended by several physicians, but without success.

Description of the Tumours.—Emilie Sève, the subject of this case, weighed one hundred and sixty-seven pounds, although somewhat lean, and of an ordinary stature. The posterior surface of the trunk towards the cervical region presented two tumours, eight inches long, and three broad, uneven, and covered with small whitish spots. A third, very small, round, and soft, was situated at the posterior edge of the right arm, near the armpit. The fourth, which arose from beneath the inferior angle of the right scapula, was one foot three inches long, and six broad. The fifth was beneath the insertion of the preceding, and was

* An apparatus of nearly a similar kind has been in common use in the practice of this city, for the last fifteen years. It was originally introduced by Dr. Physick.

six inches long, and five broad. The sixth was larger than a man's head, and was situated at the external part of the right hip bone. The seventh was smaller, and seated above the trochanter of the same side. Finally, the eighth had its origin at the left hypochondrium, and reached down as low as the calf of the leg, being two feet long, and three feet one inch round its base. All these tumours were of the steatomatous kind, soft, uneven, of a loose cellular tissue, and entirely isolated from the internal organs and muscles. From all the circumstances of the case, M. Dagorn inferred, that the disease was not depending upon any particular *vice*; that it was confined to the integuments and cellular tissue; and that amputation of these tumours was practicable and advisable. The operation was therefore resolved upon, and performed by M. Dagorn on the 20th of July, 1819, in the presence of several physicians. The largest tumour was removed by making two flaps, and from the extent of the wound and the flaccid state of the skin, the twisted suture was required. The tumour weighed forty-six pounds. The integuments were very thin, and the cells of the cellular tissue much dilated, and filled with a diaphanous, serous fluid, mixed with yellowish, fatty flakes. From the summit to the base of the tumour the trunks of an artery and vein were visible, which ramified over the surface and into the substance of the mass.

The cicatrization of the wound took place at the end of two months and six days; after which, the other tumours, which had remained stationary, increased considerably.—*Revue Médicale, Août, 1822.*

THEORY AND PRACTICE OF MEDICINE, AND MATERIA MEDICA.

Dr. Henry Payne's Observations on the good Effects of Oil of Turpentine in Puerperal Fever.—Dr. P. finds, that “Whether early or late in the disease, the turpentine, when properly administered, avoiding, at the same time, every thing that is likely to prove irritating, will effectually remove every symptom of the complaint; which it appears to do, by augmenting the secretions into the intestines, to an extent proportionate to the amount of the inflammation, whether affecting the uterus and its appendages, or the peritoneum. The bowels are as quickly and as powerfully excited to action, as the vessels that open into them; and the profuse discharge that takes place, does, certainly, according to the experience I have had in puerperal fever, more quickly and effectually relieve the patient of her sufferings, than bleeding or any other remedy.”

He gives ʒij. every two hours, till sufficient purging is produced. No cases are, however, given, which is to be regretted.

One only is alluded to, and it is said, that "although this patient was in articulo mortis, at the time of the exhibition of the turpentine, she recovered very quickly; and the same success," Dr. P. goes on, "has attended the treatment with turpentine of every case of puerperal fever that has, within the last seven or eight years fallen under my care." Dr. P. alludes to Dr. Campbell's dissections, by which it appears, that the abdominal nerves are enlarged in puerperal fever.—*Lond. Med. Intel.*

Dr. Whitlock Nicholl on Oil of Turpentine in Purpura Hæmorrhagica.—Bleeding, says Dr. W., is allowable in purpura, when there is "increased impetus of the blood," and where "obstruction in the vessels" is owing to an overloaded state of the vascular system. But where the viscera are obstructed, active purging is the proper indication of cure. In these cases, Dr. W. recommends oil of turpentine; and he alludes to two successful cases, published by himself, in the Medical Repository for July, 1821. Since then he has cured a child who laboured under purpura. The child took for many days, ol. tereb. ℥ss. et syr. sennæ ℥ss. daily, divided into three doses. The patient took also, latterly, bark and acid.

Dr. James Forbes on Tar Vapour, as a Remedy in Diseases of the Lungs.—It seems that Dr. F. has tried the tar vapour very extensively at the military hospital, Fort Pitt. "In a small ward containing six patients, are placed two common metal pots, into each of which two pounds of tar are poured, with the addition of one ounce of the supercarbonas potassæ, in order to absorb the pyroligneous acid. Under these vessels is placed a spermaceti oil lamp, by the heat of which the vapour is disengaged." The windows and door is closed. It was generally used for six hours daily. It had a decidedly bad effect in six *tubercular* cases. In cases of chronic catarrh, however, it was often decidedly beneficial. Dr. F. means, by chronic catarrh, a sequela of bronchitis, in which he believes inflammation does not exist, the mucous membrane being only relaxed. Our experience only recognizes subacute inflammation of the bronchial membrane in chronic catarrh. However this may be, the tar vapour appears to be useful in chronic catarrh, by its conspicuous property of diminishing expectoration. Dr. F. gives the following table of his practice.

Diseases.	Total treated.	Cured.	Improved.	No effect.	Bad effect.
Phthisis.	19	0	0	8	11
Chron. Cat.	32	8	6	18	0

These cases of Dr. Forbes agree fully with the slight experience which we have had of the tar vapour. It certainly relieves

bronchial complaints after the acute stage has passed. But, we recollect in one case, that if the tar were boiled for longer than a certain time, that is, after all the turpentine had been evaporated and only pitch remained, that the fumes became very irritating. Hence we doubted whether the turpentine were not the efficient ingredient of the tar.—*London Medical and Physical Journal.*

Prussic Acid and Oil of Croton.—Dr. Darwall, in his Report of the Diseases of Birmingham, writes as follows:—"The disease of most frequent occurrence, next to dyspepsia, was phthisis pulmonalis. This was certainly, in many instances, to be referred to the employments carried on in the town, acting probably upon constitutions predisposed. In some of these cases, great relief was afforded by enjoining absence from labour. In a button burnisher, in whom there was evidently an increased determination of blood to the part, the symptoms several times disappeared under the use of digitalis, but as often returned upon resuming his employment. For this disorder, also, the prussic acid has been lauded. I can only say that, after numerous and very attentive trials, I have not seen the slightest relief afforded by it, while many patients are unable to take the smallest dose from its occasioning nausea and vomiting. The only instance in which this dangerous medicine seemed really useful, was a disease of the heart, accompanied with great pain, palpitation, and copious expectoration. It is but right to add, however, that all these symptoms had raged, and disappeared in a singular manner, before this fashionable medicine was in vogue."

The same writer says,—"The oil of croton I have tried very extensively, and it is certainly a valuable addition to medicine. It has generally produced nausea and vomiting, but not so frequently griping. One circumstance attends its operation, which I have not yet seen noticed,—viz. the very little constitutional derangement which it leaves. After the operation of other drastic purgatives, a feverishness and loss of appetite remain for a considerable time, and the catharsis from elaterium is frequently alarming. But I have seen none of these consequences after the croton oil, which, however violently it may operate upon the bowels, has not, in any instance in which I have given it, (and I have given it in upwards of forty,) left the slightest disorder or uneasiness. In other respects, my experience accurately corresponds with the accounts which have been given of it by other writers.—*Edinb. Med. and Surg. Journal.*

Use of Opium in Gangrene.—M. Janson, surgeon in chief of the *Grand Hôtel Dieu*, at Lyons, has derived great advantage

from the use of opium internally, in numerous cases of gangrene of the lower extremities, produced by the ingestion of the *ergot*, which occurred to him in the course of the years 1818, 1819, and 1820. The gangrene continued its ravages so long as the pain persisted in the affected limb, whilst the inflammatory circle began to form, when the patients enjoyed some hours' sleep by the aid of opium.—*Nouveau Journal de Médecine, Juillet, 1822.*

Some Observations on the Employment of the Sulphate of Quinine in the Treatment of several Diseases, and especially Neuralgia By P. L. Dupré, Officier de Santé at Cérasier (Yonne.)

Case 1st.—A tertian intermittent, accompanied with suborbiter neuralgia, cured by the *sulphate of quinine*.

The subject of this case was a man aged sixty-four years, who, at the commencement of May, 1822, was attacked with an intermittent, which assumed the tertian type. At the invasion of the second paroxysm he was seized with violent suborbiter neuralgia. In the interval between the third and fourth paroxysms, M. Dupré administered the *sulphate of quinine* in the dose of twelve grains, dissolved in a mucilaginous potion, aromatized with orange flower water. This potion was divided into four doses, which the patient took every four hours before the paroxysm, which was shorter and less severe; the neuralgia also became more supportable. A second dose, similarly administered, entirely suppressed both the fever and neuralgia. In order to prevent a relapse, a few grains only of the preparation were exhibited during four days.

Case 2d.—Femora-popliteal neuralgia, cured by the employment of the *sulphate of quinine*.

The subject of this case was thirty-three years of age, of a sanguine temperament. He was attacked, without any known cause, on the 26th of April, 1822, with a very intense pain, occupying the posterior part of the thigh, extending to the region of the sacrum, to the sciatic notch, with great stiffness of the muscles of the hinder part of the leg. The pain was increased by the least pressure, and the limb could not be moved. The pain came on in daily paroxysms. Local and general bleeding, baths, issues, frictions, with ether, opium, and narcotic plants, were used, but without success.

He was then put, for three days, upon a treatment consisting of the warm bath, some laxative clysters, and a spare diet; and, on the 17th of May, M. Dupré commenced with the *sulphate of quinine*, which was administered in the dose of nine grains a day, dissolved in a mucilaginous potion. This was continued for eight days, when the patient was perfectly cured.

M. Dupré's next case is that of a female, aged fifty-two years,

who was attacked with *typhus gravior* (*fièvre adynamique*). On the 12th day of the disease, the symptoms were as follow:—"countenance pale; features changed; look fixed, anxious; pulse scarcely to be felt; tongue black, dry, with inability of putting it out of the mouth; the whole internal surface of the mouth covered with greyish aphthæ, exhaling a fetid odour; the breath equally fetid; abdomen slightly renitent, and painful to the touch; stools involuntary, black, fetid; involuntary emission of urine; frequent vomiting, which did not permit the stay of either drink or medicine in the stomach." Sinapisms were applied to the feet, two vesicatories to the limbs, and ten grains of the *sulphate of quinine* were administered, in four doses, between mid-day and six o'clock in the evening. No favourable change occurred until the 14th day, when all the symptoms became ameliorated; and six days afterwards, under a continuation of the medicine in the dose of six grains a day, she became quite convalescent.

M. Dupré terminates his memoir by two cases of intermittent fever, which were removed by the *sulphate of quinine*, where the stomach rejected every other substance, even sugar and water.

Dr. F. Ribes has, in the same Journal, related two cases of neuralgia of the facial nerve, which were cured by the administration of the *sulphate of quinine*. Upon these cases M. Magendie makes the following observation:—"If, as there is every reason to believe, the *sulphate of quinine* be a curative means for the horrible disease called neuralgia, what gratitude do we not owe to the learned chemists who have made known to us this substance, and to the physicians who first employed it in a disease before nearly incurable!"—*London Medical Repository*.

Results obtained by the Use of the Iodine in the Clinico-Medical Institute of the Imperial and Royal University of Padua.—After the effects obtained by Dr. Coindet, in the cure of the goitre, by the use of iodine, and communicated by him to the Helvetic Society, which resolved immediately on publishing his memoir, the Clinical Institute under the direction of Professor Brera, put this new remedy to the test, not indeed in the cure of goitre, but to restore sanguineous assimilation, increase vascular action, and act in a particular manner on the uterine system in deficient menstruation. Five persons were subjected to these experiments. The preparation preferred was the alcoholic tincture; sometimes the iodine was united to the black oxide of manganese.

Case 1st. Maria Filippini, aged 18 years, had until within these four months past enjoyed excellent health, since then she

has had suppression of the menses, by which she has been subjected to repeated spittings of blood.

Arrived at the clinical ward, and subjected to the use of the iodine,—the spitting disappeared, and she went away, her health tolerably well re-established.

Case 2d. Antonia Masa, 21 years of age, likewise wanting in her menstrual discharges for some time past: was taken with vicarious hemoptysis. The colour of the patient was yellowish, and showed that she also was affected with diseased enlargement of the liver, the result of vascular energy.

The continued use of the iodine restored the functions of the uterus in such a manner that twice the menses flowed for six days in succession.—She is now perfectly restored to health.

Case 3d. Catherine Phillini, 22 years of age, suffering under dysentery from suppressed menstruation, was cured by the continued use of the iodine.

Case 4th. Giovanna Guerinæ, aged 16 years, pellagrous, entered the Clinical Institute with diarrhœa, reduced strength, suppression of the menses, and so emaciated that she seemed already labouring under marasmus.—The tincture of iodine restored this patient to her primitive health.

Case 5th. Maria Giacomini, 23 years of age, presented herself, complaining of prostration of strength, suppression of the menses, and in place of them a monthly loss of blood from the internal angle of the left eye.—The complexion of the patient was jaundiced, and she showed a state of preternatural assimilation in the greater number of the organic tissues, by a defect of vascular action.—When put under the use of chalybeate remedies, she almost constantly vomited.—The iodine alone was discovered to be eminently advantageous. With happy results she was then treated with the tincture of iodine, and subsequently, the same combined with the black oxide of manganese.—The palpebral hemorrhage ceased, and true menstruation appeared in its place.—The patient gained strength and colour, but the want of iodine prevented us from continuing our observations.

It is worthy of remark, that this remedy, besides its being endowed with the property of increasing vascular action, restoring sanguification and re-establishing the ordinary sanguineous excretions, particularly from the uterine vascular system, on which it would seem to exercise a direct action, excites the activity of the gastric functions, so that under its use the appetite is renewed and active, the work of digestion goes on with celerity and without inconvenience even in delicate females, and those with weak stomachs.—*Lond. Med. and Phys. Journal.*

*Tetanus.**—Tetanus, especially of the traumatic kind, is so dreadful a disease, and so very often fatal, that every successful case should have all possible publicity, for the good of humanity and the honour of the profession.† Mr. Barr's patient was a young man, who, in falling from a horse, was trampled on the belly by the animal. He went about his usual avocations, however, for seventeen days, when he was, all at once, seized with tremendous universal spasms, bending the head and trunk in the form of a bow—but whether forward or backward is not stated. Mr. B. saw him an hour after the attack, and the spasms were then recurring every five minutes. The neck was stiff and immovable; and many of the muscles, especially the pectorals, felt rigid. The jaws were firmly locked. Our author instantly bled him, *pleno rivo*, to the amount of 50 ounces ‡ in about half an hour after which, the muscles of the jaw relaxed, and three fluid drachms of laudanum were exhibited. The spasms became less powerful and less frequent, having now an interval of half an hour. A drachm of laudanum was repeated after each spasm. At three o'clock next morning, the patient was again bled to 12 ounces; the laudanum, combined with two grains of camphor, to be continued as before. The spasms now returned about once in the hour, and not nearly so severe as before. Throughout the whole of the second day the paroxysms recurred once an hour, the jaws being completely locked during each paroxysm. Bled in the evening to 20 ounces. Having vomited the tincture, four grains of solid opium were ordered to be taken after each spasm. A nitric acid blister was applied to the whole spine. The spasms now occurred every two or three hours. On the third day some strong purgative pills, and three 15 grain doses of calomel were ordered to be taken. Had seven stools through the day, having taken the 45 grains of calomel. The spasms recurred this day every hour and half, and very severe. A drachm of solid opium was therefore given at once. In about 20 minutes the patient began to doze a little, but not to sleep—complained of giddiness, and some dyspnœa. In an hour and ten minutes he fell asleep, shortly after which, the breathing became slow and very

* Mr Geo. Barr. Surgeon, Kelsyth. Edinb. Journal, No. 71.

† Aretæus, with his usual terseness and forcible language, calls tetanus an "*inhumana calamitas, injucundus aspectus, triste intuitu spectaculum, et malum insanabile.*" Modern medicine, on this, as on very many other occasions, can boast of much more success than the ancient. Tetanus cannot now be called "*malum insanabile,*" even were it more fatal than it is.—*Ed.*

‡ It appears from Celsus that Asclepiades was a great advocate for bleeding in tetanus. "*Asclepiades utique mittendum sanguinem credidit.*" Celsus himself, among many other means, recommends cupping the spine, and then applying the actual cautery. We think this plan would probably be useful.—*Ed.*

laborious, the number of respirations being four in the minute. The patient having continued in this state about two hours, Mr. B. roused him, when he felt nausea, which was succeeded by full vomiting on taking some warm water. This produced much relief. *Fourth day.* No spasms since last night, except one paroxysm at 10 o'clock this forenoon. Mouth sore from the calomel. Venesection to 16 ounces, the pulse being 100 and full. *Fifth day.* No spasms—mouth very sore, and saliva flowing gently. From this time he became convalescent, and soon recovered completely.

We see in the above case that three powerful remedies were employed—venesection, opium, and mercury. We cannot therefore positively say which was the efficient medicine. Perhaps no one or two of them would have succeeded. The venesection prepared the way for the speedy operation of the opium and calomel. We have long been convinced that general and local (from the spine) bleeding, opium, and mercury, are the best means we possess of checking this formidable disease. These are the means indeed which have been employed of late years between the tropics, where tetanus is so prevalent. The dose of opium, in the present instance, we think was rather too large, though we are quite satisfied that in tetanus and some other painful diseases, such is the torpor or insensibility of the stomach, that opium and all other medicines may be taken in doses *infinitely* greater than the same patients would be able to bear in a state of health. Purgatives are useful auxiliaries in recalling sensibility to the ganglionic system of viscera, and thus lessening the quantum of irritation on the origins of the spinal nerves. All the phenomena, indeed, of tetanus would lead us to conclude that nervous irritation of a high degree is propagated to the spinal marrow; and that, upon a well known and universal principle (*"ubi irritatio ibi fluxus,"*) we may next expect the vascular system to be drawn, sooner or later, into a morbid state. The irritation, however, may be so great, and the spasms so violent, as to destroy life without leaving traces of vascular derangement on dissection. In many instances these vascular alterations have been detected; and whether they are detected or not, there can be no doubt of the nervous irritation in the first instance, and indeed throughout the whole of the disease.—*Medico-Chirurgical Review.*

Croton Tiglium.—A letter from Mr. Thomson of the East India Company's service, dated Dinapore, 16th January, 1822, contains the following passage:—"One of the seeds (of the croton,) reduced to powder, and made into two or three pills with a little pepper, forms the most common purgative used by the natives of this part of India. It acts speedily and powerful-

ly; but I suspect, if not conjoined with some aromatic, it will occasion much griping. We now use it pretty frequently, combined with ginger, and, since the receipt of your letter employ the expressed oil with similar results. The latter, given in a dose of one drop, almost always purges with considerable activity; but it must be taken in some mucilaginous vehicle, for it will blister the tongue and fauces when taken by itself. I have given as much as ten drops at once, which induced instantaneous vomiting, followed by purging, but no other bad consequences ensued. In doses of three or four drops, it acts quickly and powerfully, emptying the bowels of their contents, and generally produces eight, ten, or a dozen evacuations. In certain habits and complaints, I conceive it will prove an excellent purgative, and, from its cheapness, may be introduced with advantage into hospital practice.*** When applied externally as a liniment, it produces a profuse crop of small pustules on the part, which may render it of service in certain chronic complaints. I have not yet, however, had sufficient opportunities of ascertaining all its medical properties.”—*London Medical and Physical Journal*.

CHEMISTRY.

Magnesia an Antidote to Arsenic.—Our readers will probably recollect that Mr. Hume published in the Number of this Journal for November, 1821, a Case of Poisoning from Arsenic successfully treated by the Exhibition of Carbonate of Magnesia. We are requested by that gentleman to announce, that a case confirming his opinion of the efficacy of that medicine under similar circumstances, has lately been transmitted to him from the country, and the particulars of which he has promised to communicate to us in the ensuing Number.

On the difference between Sea and Land Air.—Having learned that on the Baltic, asthmatic invalids were much better at sea than on shore, M. Vogel analysed the air a league from the shore, and concluded, 1. That the air above the Baltic, a league from the shore, contains less carbonic acid than the ordinary atmosphere, and carbonic acid probably diminishing as we recede from the land; and, 2. that the same air contains muriates in greater or lesser quantities.—*Ibid*.

AMERICAN INTELLIGENCE.

PHRENOLOGICAL SOCIETY.

(Communicated.)

DURING the year which has nearly elapsed since its first formation, we have found this society pursuing its course with a zeal, untired by the many difficulties which it had naturally to encounter, arising principally from the small number of illustrations, by casts and skulls, in its possession, and the backwardness of persons in giving their attention to doctrines, the nature and tendencies of which had been ignorantly misconstrued, or designedly misrepresented, and the utility and application of which were not at first very evident. The new year, however, opens under brighter auspices. The republication of a work on phrenology, with additions and improvements, in this city; and the reception of a very large collection of casts of the heads, or skulls, and the masks of characters, distinguished for genius or crime, from Edinburgh, afford every facility to the members of the society, and citizens generally, of becoming acquainted with the outlines of the science, and of enabling them to prosecute their own observations with the effect of producing self conviction of its truth, or recantation of their error.

In the language of the Edinburgh Reviewer of Abernethy on Phrenology, "We may observe that an ignorant condemnation of phrenology will very shortly be neither a safe nor credible passport to reputation for superior good sense and discrimination. It has been demonstrated in the clearest manner that no facts or arguments are known which prove, *a priori*, the science to be unfounded, and that, therefore, its truth must resolve itself into a question purely of fact, depending for its solution upon observation. Such being the case, it requires very little sagacity to discover, that the testimony of even one individual of ordinary honesty and penetration, to the truth of the doctrines, outweighs in the scale of philosophical estimation, the sneer of a thousand opponents, who are destitute of practical knowledge of the subject. In place of one such witness appearing in favour of phrenology, it must be obvious to every one that there are hundreds, if not thousands, daily testifying to its truth."

Among the casts recently received by the society, we observe those of Burke, Chatham, Pitt, Wilkes; Robert Bruce, Oliver Cromwell, Henry the fourth of France, Napoleon, George the third, and George the fourth; Shakspeare, La Fontaine, Voltaire, Franklin, Roscoe, Raphael, Humboldt, the Prussian minister; different clergymen, Bidder, Colburn and other youths celebrated for their powers of calculation. Also casts of the skulls or heads of Indians: New Hollanders, Esquimaux, Charibs, Egyptian mummies, &c. The whole are well calculated for the purposes of national and individual comparison, to the benefit of the moralist, the legislator and philanthropist.

At the meeting of the society held on the 9th January, the following gentlemen were elected officers for the ensuing year:

President.

Philip Syng Physick, *M. D.*

Vice Presidents.

W. E. Horner, *M. D.* | Clement C. Biddle, Esq.

Curators.

George W. Smith, | J. K. Mitchell, *M. D.*

Corresponding Secretary.

John Bell, *M. D.*

Recording Secretary.

Benjamin H. Coates, *M. D.*

Treasurer.

Hugh L. Hodge, *M. D.*

The following gentlemen were appointed lecturers for the year: Drs. Coxe, Horner, Harlan, Coates, Bell, Mitchell, Lawrence.

Pennsylvania Institution for the relief of diseases of the Eye and Ear.

One hundred and thirty-six cases have been under the care of the Surgeons of the Pennsylvania Infirmary for diseases of the Eye and Ear, since the 15th of February last.

Of these there have been	Cured	-	-	-	86
	Relieved	-	-	-	13
	Removed	-	-	-	3
	Unknown	-	-	-	6
	Incurable	-	-	-	3
	Remaining	-	-	-	25
					—136

Of these there were with

Ophthalmia, - - - - -	43
Ophthalmia, (purulent) - - - - -	2
Ophthalmia, (scrofulous) - - - - -	7
Ophthalmia, with ulcers of the cornea, - - - - -	6
Ophthalmia, with ectropion, - - - - -	1
Ophthalmia, with adhesion of the ball of the eye to the lid, - - - - -	1
Psorophthalmia, - - - - -	10
Hordeolum, - - - - -	1
Tumour of the eye brow, - - - - -	1
Contusio palpebræ, - - - - -	1
Ectropion, - - - - -	1
Pterygium, - - - - -	1
Fistula lachrymalis, - - - - -	1
Ulcer cornea, - - - - -	9
Ulcer cornea, with iritis, - - - - -	1
Ulcer cornea, with nebula, - - - - -	1
Opacity of the cornea, - - - - -	6
Opacity of the cornea with adhesion of the iris, - - - - -	1
Iritis, - - - - -	2
Procedentia Iridis, - - - - -	1
Hypopion, - - - - -	2
Cataract, - - - - -	4
Do. with Amaurosis, - - - - -	1
Amaurosis, - - - - -	6
Weakness of Sight, - - - - -	2
Deafness, - - - - -	16
Do. from closure of Eustachian tube, - - - - -	2
Otitis, - - - - -	1
Ulceratio Meat. Aud. Extern. - - - - -	5

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Geo. B. Wood,

Isaac Hays,

John Bell,

R. Eglesfeld Griffith,

}

Surgeons.

P. S. Physick,

Wm. Gibson,

}

Consulting Surgeons.

We have much pleasure in calling the attention of the medical public to the ensuing work, which is much wanted, and we have no doubt, will be executed with great care and ability. The author of it is well known to us as uniting great literary taste with very profound medical erudition, (Editor.)

NAUTICAL MEDICINE;

Or Essays on the Causes, Prevention, and Cure of the Diseases of Seamen. BY JOHN BELL, M. D.

Encouraged by the very flattering manner in which many of his friends, and others, on whose correctness of judgment entire confidence may be reposed, have spoken of the *Essays* which recently appeared in the *National Gazette*, under the title of *Medical Hydrography*, the Author proposes an enlargement of his original design, and to give a more complete view of the causes, prevention and cure of the diseases to which seamen are liable on a voyage or in harbour; whether from their peculiar situation on board of a ship, the transitions of climate to which they are necessarily exposed, or the deficiency or bad quality of aliment.

Guided by some personal experience, the Author hopes to make such selections from the histories of the voyages of Cook, Peron, and other celebrated navigators, and from the writings of Lind, Trotter, Blane, Clark, &c. as, embodied in the present work, will enforce by practical precept whatever may conduce to the health and comfort of a numerous and useful class of men.

It is, in fine, proposed to render the work on *Nautical Medicine* a manual for the Commanders and Officers in the United States and Mercantile marine, who have so much in their power in the way of prevention of disease; while at the same time the Naval Surgeon, though he may find nothing new in it, will yet be pleased with a summary of our existing knowledge of the treatment of the diseases which more usually fall under his notice.

That the work may be accessible to all who will have any interest in its perusal, it is not intended to extend its limits beyond 300 pages 8vo.

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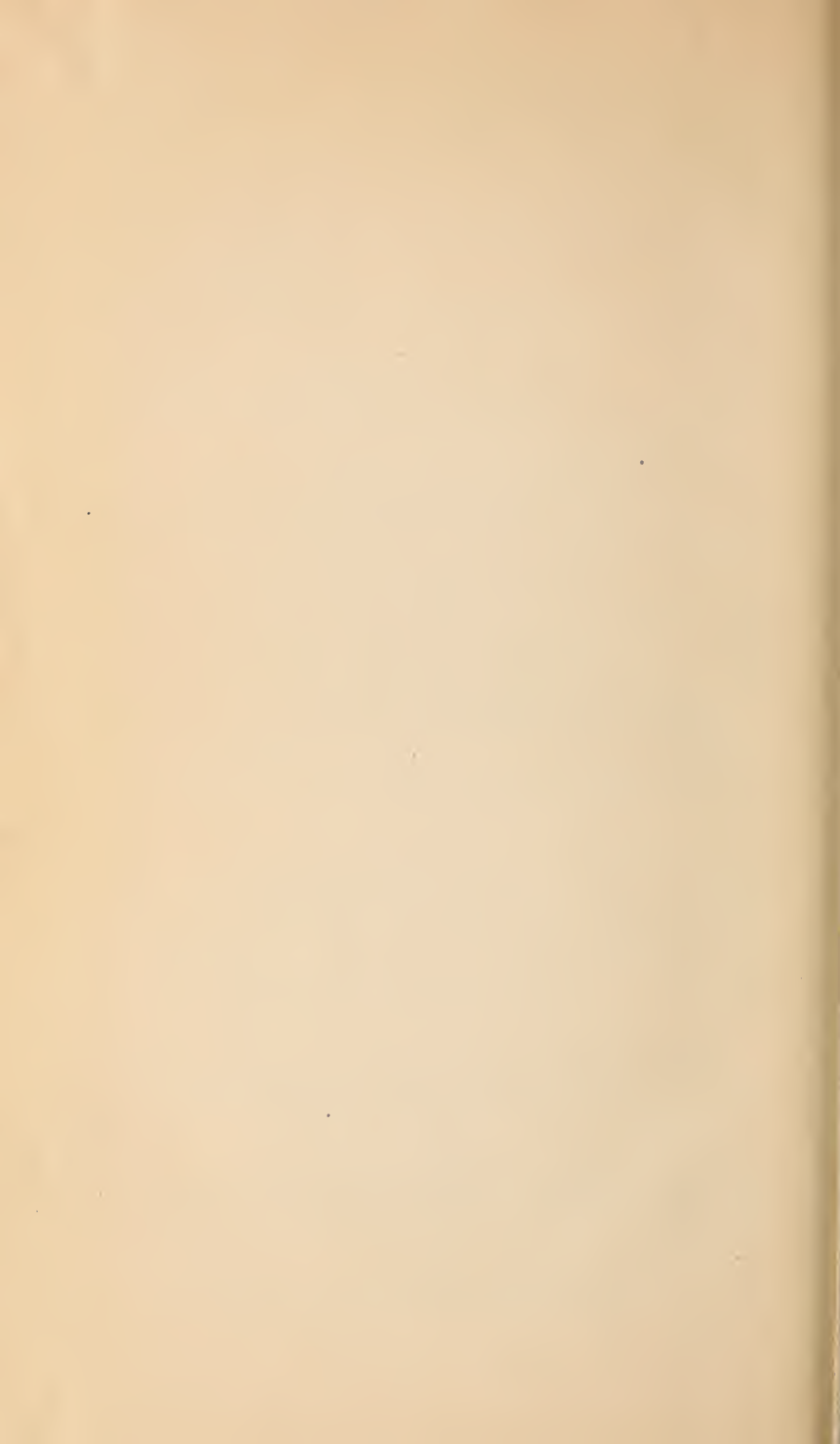
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